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IS THE DOCTRINE OF INSTINCTS DEAD? A SYMPOSIUM.

VII.—CONCLUSION.¹

By CYRIL BURT.

I.—*The two main lines of criticism.* II.—*The criticisms of Bernard and his followers: (a) The need for a structural mechanism; (b) The predominance of habit; (c) The impotence of abstractions.* III.—*The criticisms of Allport and his followers: (a) Drives; (b) The uniqueness of individual traits; (c) Functional autonomy.* IV.—*Summary.*

I.—THE TWO MAIN LINES OF CRITICISM.

THE Editor has kindly asked me to close this symposium with a reply to critics and a summary of points on which agreement has been reached. The objections raised by the contributors themselves have been admirably dealt with by Dr. Myers. But the discussion has also elicited a number of criticisms and questions from private correspondents who feel that certain difficulties have not been fully thrashed out. Most of the writers seem definitely to favour the doctrine of human instincts; teachers and school doctors declare that they find it specially helpful in understanding and handling young, difficult, or delinquent pupils. A few wish to reject it outright. These, however, are by no means agreed over their reasons. The arguments advanced fall into two more or less incompatible groups. The 'autonomists' (to borrow a label used by one of them) find the conception far too mechanical to be applied to human personality; the 'determinists' find it not mechanical enough.

II.—THE CRITICISMS OF BERNARD AND HIS FOLLOWERS.

The determinist position is well summed up in a letter sent me by a science master, who says that he "takes his cue from Bernard and Hogben." The essence of his complaint is that I have "substituted abstract tendencies for concrete causes, metaphysical dogmas for verifiable facts: thus, in place of perfectly definite and ascertainable structures, viz., reflex mechanisms (conditioned or unconditioned), you put the vague idea of an 'instinct' or 'propensity'—something which, as you say, can only be defined in terms of intangible fictions like 'tendency,' 'end,' and 'consciousness'... What is a 'tendency'? And are not all such abstractions entirely impotent as causes?" Since he has set down explicitly what many other teachers seem to feel, it is worth while quoting his criticisms at greater length.

"Modern science from Newton onwards has taught us that 'the causation of all phenomena must be conceived in mechanical terms.' Man is no exception. As Dr. Vernon puts it: 'Physiological mechanisms can be investigated by objective, scientific methods, whereas instincts cannot.' Yet instead of mechanisms, i.e., nerve-circuits, you offer us (to quote Dr. Vernon once again) 'a mysterious force or agency which cannot be analysed or subjected to scientific observation'—a 'tendency' whose existence can never be verified either under the microscope or by the naked eye. Such a 'tendency' is surely, as Bernard insists, a metaphysical myth."

"You will at least, I presume, accept Bernard's axiom: 'One cannot inherit activities; one can only inherit structures.' Yet no one has ever located such a 'structure,' i.e., a set of inherited nerve-circuits, for any human 'instinct.' Man, unlike the monkey, is controlled by his higher brain centres; but the mechanisms here are acquired and not innate. Surely the doctrine of human instincts is nothing but an out-of-date relic of Darwinian biology, or rather of that part of it which taught that the habit-mechanisms acquired by our ancestors have been inherited by their offspring, and so become the innate and automatic causes of their daily behaviour. Such a doctrine is more likely to mislead the teacher than to help him. The Freudian dogma that every child is born with a powerful sex-instinct, like a puppy or a pig, has already

¹ This reply by Professor Burt concludes the symposium begun with his article in Vol. XI, Part 3, 1941, and continued by P. E. Vernon, E. L. Thorndike, James Drever, T. H. Pear, and C. S. Myers.

done untold harm. Sexual behaviour is picked up in secrecy from disreputable films, fiction, or school-fellows. When doctors close their Freud, and re-open their text-books of neurology, they will drop their dangerous flights of fancy. . . . The theory of human instincts has surely been demolished once for all by Bernard. He has devoted a whole book to doing so; and it is disappointing that you should dismiss his arguments by a brief allusion in a footnote."

May I take what seem to be the three difficulties one by one?

(a) *The need for a structural mechanism.*—The mechanical standpoint in psychology I dismissed in half-a-dozen sentences (Vol. XI, p. 161), because I imagined no psychologist in this country would now be found to uphold it. If the universe, including ourselves, could be explained without remainder in terms of material 'structures,' obeying nothing but the simple causal laws of Newtonian mechanics, everything, I agree, would be attractively simple. Twenty years ago, when Bernard was writing, a mechanical explanation was still the ideal for popular science; twenty years ago he could safely claim that "most psychologists and neurologists support the mechanistic interpretation of instinct;" Angell, Watson, Colvin, Bagley, and many others could be cited in defence of the view that instincts are nothing but "concatenated reflexes," "inherited paths of conduction between stimuli and muscles" [(3) pp. 64-8]. To-day, in the physical as well as in the psychological sciences, the mechanistic postulate has lost its sway. The physicist assures us that material processes themselves cannot be adequately depicted as the plain and inevitable effects of universal mechanical laws; and in neurology the whole trend of recent work has been against the earlier over-simplified attempts to interpret the working of the nervous system in terms of anatomical structures instead of dynamic processes or functions. Henry Head in this country, Lashley in America, Koffka, Köhler, and the Gestalt School in Germany, have independently reached the same conclusion, namely, that mental reactions can no longer be satisfactorily explained by the theory of isolated neural conduction-paths—the theory which held the field when McDougall first began to write and when the Behaviourists began to criticise him.

The simple reflex may, no doubt, be explained in terms of an isolated 'structural mechanism'—the sensori-motor conduction-path—excited by its own specific stimulus. But an instinct is *not* excited by a specific stimulus impinging on a specific sensory element, but by a *pattern*; and the response depends, not on which particular sensory elements or sensori-motor paths are excited, but on the particular pattern which the stimuli form, almost regardless of the sensory elements or neural paths involved. Similarly with the specific tendency that is thus aroused. That, too, is not a matter of pre-determined muscular movements; any response will serve, so long as it eventually leads to the right consummation, i.e., to that new pattern in the total situation which will restore equilibrium for the time being between the organism and its environment. It follows that, as Dr. Myers has put, the Spencerian conception of instincts as merely 'compound reflexes,' the old theory that an instinctive response is simply the "blind mechanical outcome" of stimulating particular physical structures, can now most certainly be "regarded as dead." No contributor to this symposium has thought of reviving it.

(b) *The predominance of habit.*—My critic's notion that Bernard and his followers entirely deny the doctrine of human instincts seems due to a misreading of the more emphatic statements in his book. Bernard expressly admits that "the habit complex is built upon an instinctive foundation." There are, he holds, certain "fundamental structural and functional organisations which are basic to the life of the individual and the species"; these "remain wholly the same, or much the same, throughout the life-period"; and these, he concedes, "may rightly be regarded as mainly instinctive" [(3) pp. 510, 516].

Bernard's point therefore is not that man inherits no instincts whatever, but that "the acquired elements in character are *far more numerous*¹ than the inherited ones, and

¹ Bernard, however, is by no means self-consistent. On a later page he tells us what he conceives an instinct to be: it must be "recognisable as a concretely definable unit-character in the Mendelian sense"; he infers that "the actual instincts are at once much simpler, more elemental, and *much more numerous* than those set forth in the classifications of such writers as McDougall, Thorndike, Woodworth, and others" [(3) p. 522: my italics].

collectively, if not always individually, very much stronger" (p. 55). Now in spite of what my correspondent says, neural mechanisms, whether inherited or acquired, can *not* be verified at first hand by simply searching the brain with a microscope; and so, as direct or conclusive evidence is hard to come by, Bernard proposes to settle the point by balancing the probabilities. Thus, in discussing Woodworth's 'fallacious' argument that, since sex-attraction is 'universal among mankind,' we must presume it to be inherited, he replies: "In a world where acquired traits are so much more common than inherited, should not the presumption be . . . against inheritance and in favour of habit?"

To this line of argument there are several answers: (i) Sex attraction is not only universal; it is sudden and spontaneous. It overtakes us at first sight. But with habits, e.g., learning to write or to behave at the table, we can trace a long and gradual process of acquisition. Let my critic read Prof. Valentine's account of the first manifestations of instinctive behaviour in infants (10). Take only the simplest and most elementary instances: the baby feeds; is frightened by loud noises; smiles, laughs, and coos; goes stiff and red with anger. Will our critics claim that these activities must have been slowly learned by experience or from the careful tuition of others? Compare Valentine's account of these infantile responses with Chalmers Mitchell's account of the *Childhood of Animals*. The resemblances are most striking; and in animals the behaviour is admittedly inherited. When the ape evolved into man, what freak of innumerable mutations abruptly obliterated all traces of the instinctive mechanisms, handed down throughout the ages through all our mammalian ancestors? Surely the 'higher brain centres' have been merely superposed upon the lower, not suddenly inserted into their place.

(ii) As regards sex-behaviour more specifically, is it not rash to assume that, in every human being, the "collective effect" of the "acquired elements of character" is stronger than that of the inherited instinct? No doubt the psychoanalyst has magnified the importance of such inherited impulses. Yet the facts of moral conflict would scarcely be explicable, if we did not assume that sex, fear, anger, hunger, and the like are not merely innate, but often far more powerful than the restraining habits and sentiments acquired by the individual.

My correspondent asks us to open our manuals of neurology. May I then take Herrick, the eminent American neurologist to whose authority Bernard so constantly appeals? In the final chapter of his text-book I find him citing "the bitter cry: 'When I would do good, evil is present with me,'" and declaring that "the evolutionary struggle for survival is not merely between individuals but within the individual—between innate tendencies or instincts and individually acquired experience." "Our immediate educational problem," he says, "is to elaborate a system of instruction which can use to the full the enormous dynamic energy in the instinctive endowment of the child, and to build upon this, in the form best suited to the capacities of the individual, a vital balance between the blind impulse of innate nature and the acquired intellectual and moral control" [(7) p. 376].

(iii) The appeal to probability I gladly accept. To collect convincing cases on a statistical basis is a slow and difficult business; but it affords, in my opinion, by far the best approach at the present stage. Dr. Vernon objects that bad-tempered boys brought up by bad-tempered parents, and over-sexed girls who have heard of their parents' sex-delinquencies, may be merely copying these characteristics, not inheriting them, just as a child brought up by a left-handed parent may copy her left-handed habits. I agree. But we can choose for our data children who know nothing of their left-handed, quarrelsome, or over-sexed relatives. Here the figures so far obtained unquestionably show that the children of such parents still display these respective characteristics in demonstrably greater numbers than the ordinary population. But, as Prof. Thorndike remarks, "the use of familial correlations . . . has still a long hard road to travel."

(c) *The impotence of abstractions.*—My critic dislikes the suggestion that instincts involve anything so intangible as consciousness. That, he considers, transgresses the mechanical postulates of science. Consciousness is an 'abstraction,' and as such

'impotent.' Bernard, too, declares that "the claim of some authors that instinctive activity involves a conscious element is clearly untenable" (p. 519: the adverb "clearly" seems to indicate that the statement is so self-evident that no further proof is needed). "Whenever we find consciousness, that shows we are dealing, not with an instinct, but with a habit" (p. 77). Personally, I should have thought that the distinctive marks were just the reverse. As a movement becomes habitual, so it becomes more and more unconscious; and that in turn implies—at least *prima facie*—that consciousness plays a potent role in the processes of adaptation and of learning.

"Because it could only be based on some structural mechanism," says my correspondent, quoting Bernard once again, "an instinctive action would be 'invariable and stereotyped,' like an unconscious reflex. But the child's behaviour is the reverse of 'invariable and stereotyped.' Hence it cannot be instinctive." I should have said the conclusion rather was that the child's behaviour cannot be explained as determined solely by "structural mechanisms . . . like an unconscious reflex," but is a conscious and conative activity, aiming at a definite end or consummation, which may be reached, not by invariable and stereotyped behaviour, but by varying the means and adapting the responses. As Woodworth puts it: 'The reflex is an unconscious reaction; the instinct a conscious reaction. . . . What is characteristic of the instinct is, not the automatic and unconscious working typical of a reflex, but the persisting *tendency*, set up by a given stimulus, and directed towards a result which cannot be instantly accomplished.'"

But here my critic will repeat his protest against "so unscientific a term as 'tendency.'" Bernard's dictum is quoted: "A tendency which is not a purely metaphysical and mythical abstraction must clearly be a neural disposition" (and, as before, the adverb 'clearly' seems to indicate that the postulate is too self-evident to need arguing at length). Now, as a matter of fact, in all its branches, science works far more with 'abstract tendencies' than with 'concrete causes.' Gravity, inertia, and the first law of motion each describe, not an actual process or an individual structure, but a hypothetical tendency. We resolve the curved motion of a cannon ball into a tendency to continue in the line along which it was originally projected, and a simultaneous tendency to fall to the ground under the influence of gravitation. The two component motions are not physical realities: for no cannon ball can move in two directions at once. They are 'metaphysical and mythical abstractions.' The substitution of abstractions for concrete causes is still more marked in modern science. "Whereas classical mechanics pictured a universe whose substance is mass, energy, and force, quantum mechanics pictures a universe whose substance is probability."¹ And what could be more abstract than a 'wave of probability'?

My critic asks me how the term 'tendency' is to be defined. It is a perfectly definite notion. A tendency is a potential change such as can in theory be expressed by a differential equation in regard to time.² As such, it makes a prediction; and predictions express probabilities. In mechanical problems, the potential change is a change of position: the independent variable (denominator) is time, and the dependent variable (numerator) is a definite direction in space. But the conception can be broadened to include determinate aspects of any kind of change. Instead of a vector defined by spatial co-ordinates, we may then have a more general

¹ A. EDDINGTON: *New Pathways in Science*, p. 128.

² I do not share Prof. Dreyer's objection to introducing the idea of a 'gradient,' viz., that we thereby "refuse to admit the character of consciousness which belongs to the process"; but I fully agree with him that "we are directly aware of the gradient," i.e., of the 'tendency.' How instinctive tendencies may be expressed as probabilities I have explained in my opening paper (Vol. XI, p. 168). To this, I am glad to note, Prof. Thorndike fully assents. "There are," he writes, "no such magical instincts [as faculty psychology assumed]: there are only certain probabilities, ranging up to near certainties, that certain situations will evoke certain responses as a consequence of features in the fertilised human ovum" (Vol. XI, p. 85). And, in a later paragraph, he expresses agreement with my view, as a "compromise between a factual psychology of instincts and a faculty psychology of instincts"; and adds, though "the wisdom of the ages about man's original nature" may be "worth more to the educator" when expressed "in its own terms" (i.e., in the popular language of the faculty psychologist), the factual psychologist will "translate it into actual probabilities that situations 1, 2, 3 and 4 will, under neutral environmental treatment, evoke responses *a*, *b*, *c* and *d* respectively" (p. 87).

component or 'factor,' e.g., some definable aspect of a *qualitative* change. In such a case we must still state its direction as well as its strength or magnitude. Just as we define the vertical component of the falling cannon ball by saying it is directed towards the earth's centre as an end or goal, so we can describe mental tendencies—what Lewin has called the 'vectors' of behaviour—in terms of the goal or end at which they are aimed.

Here my correspondent, following Bernard, goes on to inquire how can we possibly generalise about 'ends.' "How," asks Bernard, "can one assume an identity of end in the activities described by the general term hunting? There may be as many purposes in hunting as there are types of object to hunt." The quibble on the word 'purpose' is obvious. A physiologist, adopting Bernard's lines of argument, would have to abandon any notion that there might be a biological purpose in eating, because there must be as many purposes in eating as there are types of object to eat; and the physicist could prove that there is no such thing as gravitation, since falling bombs move towards as many different objects as there are targets for them to fall upon. Every attempt at conceptual analysis becomes taboo: for it can lead only to "metaphysical and mythical abstractions."

Yet in any case, my critic rejoins, we cannot inherit an abstraction: for he "presumes that I shall at least accept Bernard's axiom that we can only inherit a structure." I do not accept it. I have no space to argue the point at length, and will merely give one instance. It is not only possible but even probable that much of what we inherit is passed on, not in the form of 'structures,' but as chemical properties: the operation of the sex instinct, for example, could in theory be explained quite as well in terms of tensions set up by, and ultimately relieved by, chemical changes, as in terms of currents flowing through nerve-circuits. But these are side-issues. The essential conception has been aptly compressed by Dr. Myers into a single pregnant phrase: instincts are 'innate determining tendencies'; and it has been admirably enunciated by Prof. Thorndike when he states: "These gene-caused determiners of human behaviour cause a person, not to do some one thing in response to a certain situation, but rather to do one after another of a number of things *until a certain result is attained*" (his italics).

In all these strictures, as it seems to me, it is the critics who are becoming entangled in remote philosophical issues. To lay down in advance, as an axiom or postulate, that human behaviour *must* be explained in terms of mechanical structures, and *must* be described without any reference to consciousness or functional ends, is not empirical science but dogmatic metaphysics. I am delighted to find that Dr. Vernon, the severest critic of my 'final conclusion,' is nevertheless "in entire accord with his [Burt's] views on behaviourism and purpose, and in particular . . . would follow him in stressing conation as the most valuable and essential component in the doctrine of instinct."

III.—THE CRITICISMS OF ALLPORT AND HIS FOLLOWERS.

The critics just quoted reject the notion of inborn conative tendencies in order to substitute a structural machinery of a more materialistic type: for them McDougall's instincts are not mechanical enough. The second group of critics find the doctrine of human instincts too mechanical: it "reduces all moral conduct to the fatally determined movements of a clockwork robot." Some of them, assuming with the former group that all science is mechanical science, infer that the understanding of the individual child cannot be a scientific matter at all. Most of them appeal to the authority of Allport; and conclude (as one of them puts it) that "Allport has shown most convincingly that the doctrine of human instincts is dead past all resurrection."¹ He adds: "Your article referred very briefly and favourably to Allport's view of personality: but surely, in spite of your statement, his view can *not* be 'reconciled' with your own. His whole point is that human motives, unlike those of animals, are 'infinitely varied,' based not on what we inherit but on what we learn."

¹ In support of this my correspondent quotes the statement in *Personality*: "in this volume instincts are dispensed with from the beginning" [(8) p. 195]—a phrase also criticised by Dr. Myers. However, in his more recent article Allport seems less inexorable in his dismissal: "While *not denying* the possible existence of instincts in infancy, or even the persistence of some instinctive forms of activity throughout life, the principle of functional autonomy regards the *developed* personality as essentially a post-instinctive phenomenon" [(9) p. 545].

Among those who have directly contributed to the symposium, Dr. Vernon and Prof. Pear also cite the arguments of Allport, and hold, or seem to hold, that the doctrine of instinct, if not dead, is certainly moribund. Dr. Vernon gives a most valuable and well-balanced review of American criticisms, but finally decides that "instincts are of no great interest to the practical psychologist or teacher" (p. 9). Prof. Pear¹ has offered two instructive summaries of Allport's doctrine of 'functional autonomy,' and ends by stating (in Allport's words) that "human goals must be viewed as *different in kind* from the stereotyped objectives of lower animals: . . . adult motives are infinitely varied . . . contemporary systems, growing out of antecedent systems, but functionally independent of them" (this *Journal*, XII, 1942, p. 147).

(a) *Drives*.—But is it really true, as these two contributors tell us, that "instincts have been virtually eliminated from contemporary American psychology"? Not only Bernard, but writers so eminent as Thorndike, Woodworth, and Lashley accept them under that name; and what Allport and others seem to have eliminated is not so much the concept as the word, together with certain inessential implications that have gathered round the word in the popular discussions. For my part I see little or no essential difference between what Allport and his followers call a 'drive' and what I have defined as an 'instinct.' Flung out at the front door, the old instincts are allowed in at the back, after assuming an *alias* and a slight disguise.

Used as they propose, the term 'drive' has come into psychology as the English form of the German word *Trieb* (impulse). But *Trieb* is simply the regular synonym for *Instinkt*, adopted by those German writers who prefer Tuetonic terms to Latin. For the young American student—brought up perhaps in a behaviouristic school, where the word instinct has lost its broader sense, and has come to denote merely a 'mechanical action-pattern'—it may perhaps be easier to change to a new word like 'drive' than to return to the old and proper meaning of 'instinct.' To British students, to talk of a 'hunger-drive,' a 'sex-drive,' or an 'anger-drive' seems as puzzling as it is far fetched. Unlike 'instinct' and 'impulse,' the word 'drive' has no convenient adjective; unlike 'instinct' it does not suggest an impulse that is innate; and it obviously does not lend itself readily to a scientific vocabulary.

For the student of education I know of no recent work on Personality so sane and so stimulating as Allport's book. Yet a closer study of his special views will show, I think, that they consist rather in a change of emphasis than of fundamental conceptions. For the sake of those who still think that a materialistic behaviourism is the orthodox creed for psychologists, in America if not in this country, let me begin by noting an American's pronouncement on this point. "Mechanistic reflexology," says Allport, "has certainly been vanquished; its adherents seem to be re-aligning themselves either with the 'operational' creed that is frankly sceptical of the principle of causation, or else with the 'organismic' position, that re-defines both purpose and mechanism, reconciling them within the new concepts of system" [(9) p. 534]. Allport himself leans towards the latter standpoint. "All drives," he tells us, "are either acquisitive or avertive. . . The organic cravings, which are the sole original motive power for activity, have their origin in various segments of the autonomic nervous system" [here, like Bernard, he is largely following Kempf (2)]. And thus "the personality of an individual is the mode of adjustment or survival that results from the interaction of his organic cravings or segmental drives with an environment both friendly and hostile to these cravings, through the intermediation of a plastic and modifiable central nervous system."

As examples he specifies: (i) the nutritional drives or cravings, (ii) the sexual drives, (iii) those resulting from "persistent organic tensions involving fear"; and from his later account of the early development of the child, it seems that he would include, like Bernard, (iv) anger or aggressive drives, and possibly others whose existence is less easy to establish.

¹ Prof. Pear's second paper, which he was good enough to send me in galley-proof, only reached me after I had written the present article. (My references are to the numbers of his slips, not to pages.) His suggested 'reconciliation' I at once accept; namely, in Allport's statements about interests, etc., being 'acquired *rather than* innate' to substitute '*as well as*' [(11) 7].

As for "maternal conduct, gregariousness, curiosity and the like," they certainly have "the tenacity and compelling power that instincts are supposed to have; if they are not instincts" (and he himself believes they are not) "then they must be autonomous sentiments with as much dynamic character as has been attributed to instincts" [(8), p. 201].

The difficulty, he says, about most of the alleged 'propensities' (in McDougall's sense) arises from two reservations: first, the actual behaviour is admitted to be very "loosely geared" to the goals or purposes; secondly, these purposes themselves are not present at birth, but are said to "mature." Hence, it is almost impossible to "discover them empirically" [(9) p. 536]. Allport's treatment of "the expressive aspect of behaviour" is unquestionably a great advance on McDougall's yet not, I think, inconsistent with McDougall's general principles. He acknowledges the existence of 'native factors' in emotions and their expression, and even admits that the "native factors in expression seem resistant to change" [(8) p. 464; cf. (4)]. He insists, however, that his account of 'drives' is put forward merely "as the *starting point* for a theory of human motivation" (his italics). Even if inadequate to account for adult motivation, he holds that a hypothesis of 'innate drives' and 'native factors' is indispensable to an understanding of the motives of children.

The chief difference between McDougall's view and Allport's arises, not in relation to the child, but in relation to the adult. In the main, McDougall's 'propensities' are permanent; Allport's 'drives' are temporary—or at least far less 'resistant to change.' Allport would like to resuscitate William James' notion of the 'transitoriness of instincts.' "After the level of infancy is past," he believes, "the primitive segmental drive rapidly recedes in importance." It is "progressively supplanted¹ by the more sophisticated type of motive, characteristic of the mature personality"; or, as he puts it in another context, "the original drives, instincts, or libidinal strivings of early childhood . . . are quickly overlaid by experience, and organised into a personal system of attributes" [(5) p. 818]. And this final organisation is *unique to the individual*.

(b) *The uniqueness of individual traits*.—Here we encounter Allport's principal objection to the conception of human instincts as an aid to understanding personality. "One consequence of that view," he says, "is the belief that instincts, which are common to the species, serve as identical cores in all personalities, so that all personalities are at bottom the same" [(9) p. 556, cf. (8), p. 239]. On these grounds he proposes to substitute description by 'individual traits' (i.e., unique traits peculiar to each person) for 'common traits' (i.e., traits shared by many or all): for "no two persons ever have precisely the same trait; . . . the common trait is not a true trait at all, but a measurable aspect of complex individual traits" [(8) p. 229].

Now in a limited sense both these statements are incontestable; but the conclusion drawn seems misleading and exaggerated. Every man's face is absolutely unique; yet should we argue that the 'common' features—the eyes, the nose, the mouth—are not 'true' features at all? We may agree that a list of facial measurements would be no substitute for a photographic reproduction of an individual face in all its concrete completeness. But equally a set of portraits, however life-like, could not by themselves suffice for scientific purposes.

Allport complains that individual traits, which he considers of supreme importance, "have hitherto been neglected by all except clinical psychologists" [(8) p. 341]. But here, as so often in disputes between 'academic' psychology and 'clinical,' a fundamental divergence of aim is overlooked. Psychology, as a science, deals with universals, not with particulars. To confine it to 'concrete individuality' would be to stultify it from the very start. As the logician so often reminds us, "science involves communicable description; and whatever can be communicated is necessarily abstract." The clinical

¹ Yet this can hardly be true of hunger or sex. Elsewhere Allport himself declares that "in Western culture at least, sexual tensions are in fact the most important single factor in the development of most personalities, or rather sex would be the most important single factor if there were any single factors, which there are not" [(8) p. 187]. And in a reply to his critics he subsequently admits that "it is obvious that on occasion" (e.g., in the neurotic) "infantile structures persist; . . . furthermore, if one wishes to take the biological functions of feeding, sex, anger, and fear, stripped of all their individual variability, and to treat them as abstract categories of motivation, they, too, may be regarded as unchanging potentialities" [(9) p. 547].

psychologist, on the other hand, deals with the particular—that is, with a given person or patient as a unique individual. And here the logician will also warn us that “no communicable description can be adequate to the concrete individual in all its details.” This is the real ground for the clinician’s common reproach that the scientific theorists, who teach psychology instead of practising it, “traffic in academic generalities that are hopelessly remote from the living real individual.” That is undeniable; what is more, it is inevitable. And I would go further still: not only is every personality unique; his whole situation is unique as well. The same mutual criticisms reappear in the time-honoured disputes between the physiologists and the doctors. But in psychology just as much as in medicine every sound teacher is constantly warning his students against the fallacies of generalisation. “Do not think of your children as mere types”; “the text-book case is rarely seen”; “treat the patient, not the disease.”¹ At the same time, we can only understand the individual if we analyse him in terms of abstract concepts or ‘generalities,’ comparing and contrasting him with other individuals: to ban all ‘common traits,’ and sanction nothing but ‘unique or individual traits,’ would be to abolish science, not to reform it.²

To discover the most convenient ‘common traits’ and to measure individuals in terms of them is the special task of factor-analysis. On this point Dr. Drever says he parts company with me. His chief objections are two: (i) “The employment of quantitative methods independently of, and prior to, qualitative analysis, is unusual,” for how in such a case can the mathematical factor be psychologically identified? (ii) “The field in which it is now suggested that factorial methods may be employed is a field wholly different from the field in which such methods have hitherto been employed.” My answers are: (i) I should not for one moment suggest that factor-analysis should be applied “independently of, or prior to,” qualitative analysis. (ii) The employment of factor-analysis in the conative field is far from new: it has been employed in this field for nearly thirty years.³ Prof. Thorndike’s endorsement, on the other hand, is doubly welcome: “his [Burt’s] idea of getting knowledge about broad and narrow group-factors in feeling and conduct by a study of intercorrelations is,” so he considers, “admirable as a part of factual psychology”: the reservations which he appends I accept without demur. Dr. Vernon also agrees in regarding “factorial methods of analysis as the instrument which will clear up many of the doubts and difficulties in this field.”⁴

Yet both Dr. Vernon and Prof. Pear aver that there are “conflicts between the two points of view”—the statistical and the interpretative or purposive. Prof. Pear adds that, “since Allport’s theory challenges most developments of factor-analysis, we await a reply from users of these methods” [(11) p. 10]. To reply to Allport’s challenge would require an article in itself. He himself observes that “no reconciliation is possible between the doctrine of functional autonomy and the doctrine of factors.”⁵ May I therefore briefly indicate in passing how I think a reconciliation may be achieved?

Allport’s chief objection to factor-analysis [(8) pp. 242f, 429f] is that it “shares the failing of other forms of differential psychology—an exclusive interest in what is *common* to all men” (his italics). It is ‘nomothetic’ rather than ‘idiographic’; that is, it seeks to determine the ‘general principles’ of mental activity instead of ‘studying the individual’; and, in so doing,

¹ I have myself echoed these warnings in almost every book; e.g., *The Subnormal Mind*, p. 4, *et seq.*

² In a later passage Allport corrects these somewhat one-sided statements; e.g. [(8) p. 299]: “the concepts of individual trait and common trait are complementary: what is unique and what is universal both need to be explored.”

³ The first attempt, I fancy, was that described in my paper on “The General and Specific Factors underlying the Primary Emotions” (*Brit. Ass. Ann. Report*, 1915, pp. 694-6); cf. also the references given in my later articles on “The Factorial Analysis of Emotional Traits,” *Character and Personality*, VII, pp. 238-54, 285-99, and in J. C. Flanagan’s “Factor Analysis in the Study of Personality” (Stanford University Press).

⁴ Vernon doubts whether factor-analysis can “provide us with an acceptable classification . . . of supposedly innate motives.” But since the ‘innate motive’ is in my view only a distinguishable aspect, not a separable element, I should have thought factor-analysis (including under that term the analysis of contributions to variance) would be the most appropriate technique, at any rate until Mendelian biology, as applied to man, has advanced far beyond its present state.

⁵ Torn from its context, this may give an exaggerated notion of Allport’s objections. Elsewhere he admits that measurement in terms of ‘basic factors’ “has undoubted utility for certain practical purposes” [(8) p. 301].

it reduces all individuals to the same mould. I agree that these criticisms are true of that school of factor-analysis which stops short at the determination of the factor-saturations of tests or traits; but they do not seem true of that further procedure which (even when factorising traits not persons) goes on to determine factor-measurements for each individual.

Allport adds: "It is possible that the future will bring a method of factorising the components of the *single* personality, considered by itself: in this case a great advance would be made" [(8) p. 247]. I venture to reply that we have no need to wait for 'the future.' The technique of 'correlating persons' furnishes just such a method; indeed, I had already [(6) and refs.] described its aims and applications in almost the same terms that Allport himself has employed. "Each individual," he says, "would have to be considered as a 'population,'" and the investigator would seek to determine "the agreement of his acts with one another in reference to some postulated intra-individual continuum."¹

(c) *Functional autonomy*.—The 'uniqueness of personal conduct' Allport 'accounts for' by "a new² and somewhat radical principle of growth" which "may be christened the functional autonomy of motives." He gives no formal definition, but explains the concept by examples. "In nearly all mature personalities master-sentiments exist. . . . The miser perhaps learns habits of thrift in dire necessity, or perhaps his thrift was a symptom of sexual perversion: the miserliness persists, and even becomes stronger, after the necessity or the roots of the neurosis have been relieved." In this and other cases it appears that "the activity of the new unit does not depend on the continued activity of the units from which they develop" [(8) pp. 196-7]. It is this "new principle which," as more than one of my correspondents believe, "now renders the old hypothesis of human instincts superfluous."

Allport begins by arguing that "if the psychology of personality is to be more than a matter of coefficients of correlation, it *must* be a dynamic psychology." With this I agree wholeheartedly; but my difficulty is that, as seems shown by the examples he gives, there is some confusion between two different types of 'dynamic explanation'—between explanations in terms of 'neuro-dynamics' and 'psycho-dynamics' respectively. For instance, the 'circular reflex' (Allport's first example) can be explained most easily by the release of energy, in the literal sense, within a chain of neurones; on the other hand, 'the dynamic character of personal values' (his last example) must be explained on a wholly different level—in psychological, not neurological terms. In his most recent account, Allport tells us that 'functional autonomy' embraces four main generalisations: (i) the differentiating effects of learning create *individualised* motives; (ii) as a result adult motives may *supplant* the motives of infancy; (iii) though reflexes and infantilisms remain in all, the socialised individual shows *maturity* to the extent that he has overcome the early motives; (iv) all motives are *contemporary* [(9) p. 545]. In short, as Prof. Pear has said, the essence of the theory is that it "declines to believe that the energy of adult personality is infantile or archaic in nature, . . . and it relies (in Allport's own language) on 'the capacity of human beings to replenish their energies through a plurality of constantly changing systems of dynamic dispositions'" [(11) p. 9]. With the doubtful exception of the word 'all' in the fourth statement, I think none of us need have the smallest hesitation over accepting every one of Allport's points.

¹ In my view, it is possible, by factorising assessments for a single person only, to trace a progressive organisation and differentiation in his individual factor-pattern, and (as I put it) to "study intra-personality variability, and the 'cyclic' or 'spiral' character of such variations." Allport refers with approval to investigations on aesthetic taste carried out by this technique by one or two of my former students; but he seems to believe that the factor-measurements obtained by correlating persons must necessarily have no relation to those obtained by correlating traits.

² As he explains in a footnote [(8) p. 191], it is not so much the principle as the name that is new. For instance, the notion of 'reintegration' (introduced by Hamilton and most fully worked out by Hollingworth) seems to cover much the same facts. Nor is the name entirely free from ambiguity. By derivation, the word 'autonomous' should mean having its own laws, that is, self-governing; but Allport adopts it to imply, not self-governing, but rather self-driving, self-working, 'capable of providing its own motive-power.' I am tempted to suggest the term 'auto-dynamic' instead (Americans talk of an 'auto-dynamic elevator' where we should speak of a self-working lift). Secondly, it is surely the 'activity,' or the 'habits,' or the new 'structural units' (Allport's name for Woodworth's 'mechanism') rather than the 'motives' that are autonomous.

Of the various examples, the clearest and most convincing are those summed up in the well-known formula 'mechanisms become drives' [(1) p. 104]. Several writers have maintained that the mechanisms acquired by habit-formation and the like are not merely instrumental or *directive*, guiding the course of the energy supplied to them: they are also *dynamic*; they are themselves sources of energy: or, as it is sometimes put, "activities which earlier were *means* to an end now become *ends* in themselves" [(8) p. 195]. This contention formed the keynote of Woodworth's early volume on *Dynamic Psychology*. "The great aim of this book," he says, "is to show that *any* mechanism is capable of furnishing its own drive, and of lending drive to other connected mechanisms" [(1) p. 67]. By 'drive,' we are told, is here meant 'stored energy,' 'the power that makes the mechanism go.'¹ Woodworth's 'chief point' was "to take issue with McDougall's view" that the '*ultimate* sources' of energy lie always in the native instincts, and that acquired habits, sentiments, and the like, are '*proximate* sources' only—or rather, not sources at all, but merely channels for energy which is thus 'transferred,' 'sublimated' or 'organised' in the interests of higher ideals.

Now, if 'energy' is here used literally (as it should be in 'neurodynamics'), then I find it difficult to understand how the acquisition of a new habit or interest can entail the acquisition of a new source of 'energy,' for the simple reason that the main sources of 'energy' (in this sense of the word) are the muscles, the glands, and the external or internal stimuli exciting the various sense-organs lying within the body or on its surface. If, however, the word 'energy' is used in a broad metaphorical sense, in accordance with the loose analogies that are popular in what I have called 'psycho-dynamics,' then, unlike McDougall, I should find no difficulty in accepting the principle, though I should prefer a less ambiguous statement. But, as thus reinterpreted, the principle becomes little more than an extension of what used to be called *ideo-motor* action: according to this time-honoured theory, the 'idea' of any action always tends to work itself out in actual conduct, quite apart from any underlying wish or motive. McDougall, in his later writings, has more than once repudiated this view. An 'idea,' he maintains, is "only capable of determining action, when it is associated, consciously or unconsciously, with some strong conative tendency, derived from an instinct or emotion, or from a system of such emotions, i.e., a sentiment. . . . The action thus forms an indirect outlet for energy drawn from some deeper reservoir."² In the *Physiological Psychology* (p. 161), however, he unreservedly subscribed to the notion. Indeed, it follows directly from the two fundamental assumptions of his neurodynamic scheme, viz.: (i) the hypothesis that each neurone contains a self-renewing store of energy, released in an all-or-none fashion when any stimulus reaches it, and (ii) the law of forward conduction.

Whichever interpretation we accept for Allport's principle, we seem forced to infer that *all* acquired habits and *all* acquired ideas must possess some degree of functional autonomy. But then we are at once faced with further problems. First, how is it that only a few provide strong and powerful motives, while the rest remain 'mechanisms' rather than 'drives'? To this the natural answer would be that the few which do exhibit a powerful motivating drive (obsessions, compulsions, dominating interests and sentiments, and the like) are after all reinforced by 'energy' drawn from some deeper source. Secondly, what is the relation between the autonomous drives of the acquired mechanisms and the initial drives of the native mechanisms? Allport simply says that the former '*supplant*' the latter; I should prefer to say that they *grow out of*³ the latter: the new

¹ Allport in this context, adopting Woodworth's terms, now describes a 'drive' as "any neural process that releases mechanisms especially concerned with consummatory reactions." In this definition everything turns on what we mean by a 'consummatory reaction.' Woodworth's explanation is very broad: "a consummatory reaction is one of direct value to the animal, one directly bringing satisfaction" [(1) p. 40]. But with these interpretations there is surely no longer any conflict between McDougall and his critics.

² *Social Psychology*, 24th ed., pp. 323-5; *Mind*, 1920, N.S. XXIX (1920), pp. 277-93.

³ Possibly Allport would himself accept this; for he says in passing: "theoretically all adult purposes can be traced back to these seed-forms in infancy; but as the individual matures the bond is broken" [(8) p. 194]. McDougall would express the latter point in terms of different metaphors, and say the energy was 'drained' into the new channel, so that the old was 'inhibited' and ultimately 'atrophied.' But otherwise there seems little to distinguish the two views.

growth and its special direction may be the effect of many different factors—the blocking of the natural outlet, the pressure of conditions in the social environment, the mode in which the total personality has been organised up to date, and so on. I conclude (though I have no space to argue the matter in detail) that we must regard both principles as true in theory—‘functional autonomy’ as well as ‘instinctive reinforcement,’ and that the second principle (that adopted by McDougall and the psychoanalysts) seems to be by far the more fruitful in practice. It is the reinforcement of acquired ideas that is so important to the teacher and the therapist.

But the phrase ‘functional autonomy’ is stretched to include several different phenomena, which seem to me to be very dissimilar in their essential nature. Two are of special interest. There is, first, the functional autonomy shown by activities *during* the learning process, and, secondly, the functional autonomy of activities *after* they have been completely learnt. Woodworth lays most stress on the latter. Yet they are not the most conspicuous in everyday life. Admittedly, it is easy to *drop* into an automatic habit, when occasion arises; but that does not mean that an automatic habit springs up by an internal force of its own. (The irresistible craving for tobacco or drugs that supervenes when the addict tries to break his habit—another of Allport’s instances—does not really prove the point: it merely shows that an *internal* stimulus may be as effective in arousing the habit as an *external* stimulus.)

For the teacher it is the first type of case that is especially interesting. Habits have most ‘autonomy’ in Allport’s sense *before* they have become ‘autonomous’ in the literal sense. The best examples are to be found in Lewin’s celebrated experiments on interrupted tasks. “Let a task be accepted for any reason at all, and the attitude engendered seems to furnish its own drive, until accomplishment is reached.” Such cases can readily be explained by ‘integration’ and ‘reinforcement’—i.e., by a ‘closure of the gap,’ and, when necessary, a recourse to some ‘deeper source of energy’ to do so. Allport indeed admits that here the “perseverative principle may depend upon ego-involvement” [(9) p. 544]. But that in turn seems to concede almost all that McDougall would desire. This ‘ego-involvement,’ he would argue, must really mean that, consciously or unconsciously, the mere perseverative tendency has been reinforced either by the instinct of self-assertion or (‘self-display’) or by the self-regarding sentiment: in taking up the task in question the ego has set itself that task as an ideal or goal to be achieved.

In placing chief weight upon the first type of process, Allport holds that he is ‘correcting’ Woodworth’s view [(8) p. 205.] But Woodworth himself observes that a mechanism is most apt to serve as a drive “at the stage of effectiveness when it has not yet become entirely automatic” [(1) p. 104]. This further admission, however, would appear to undermine the chief contention of both authors: for, were their chief contention true, viz., that the most powerful drives come from acquired mechanisms, then surely those mechanisms should be most effective as incentives when they had been most perfectly acquired. If, on the other hand, they are more effective while still in the making, the inference seems clear: what supplies the chief source of energy must be, not the acquired mechanism itself, but the antecedent motive which impelled the learner to acquire that particular habit.

Allport points out that, in regarding “all motives as contemporary,” his “theory is obviously opposed to psychoanalysis and other genetic accounts assuming inflexibility¹ in the drives of life.” Certainly, his insistence on the ‘functional autonomy’ of present motives comes as a wholesome corrective to the practice of those psychoanalysts who tend to explain everything by the individual’s early history, and neglect all current and external sources of interest, strain, or conflict: those who always see the patient alone in the consulting room instead of at his home, school, or place of work, are tempted to think of his life as a drama played out in the theatre of his own mind instead of upon the wider stage where he is called upon to act his part.² I agree, too, that we should always require

¹ I should not have thought that ‘inflexibility’ was an appropriate word for accounts that expressly include sublimation, substitute formation, and the like.

² In its emphasis not merely on the ‘total personality’ but also on the ‘total field,’ the ‘topological’ approach forms a useful supplement to the purely ‘historical.’ Yet, absorbed in their spatial representations, Lewin, J. F. Brown, and the other topologists seem to forget the dimension of time.

"proof that instincts are actually at the basis of a motive, or that it is sustained by some infantile fixation": but I cannot agree that "such demonstrations are rarely forthcoming" [(9) p. 549]. Allport, however, considers it "more reasonable to take a motive at its face value, to assume that it is pretty much what it seems to be." On this principle, of course, we are bound to discover that "motives are infinitely various." But is not the maxim a little dangerous? The student who reads Allport's chapters rather hastily receives the impression that any genetic or psychoanalytic search for deeper factors will be waste of time. He is willing to take 'at their face value' innumerable rationalisations, and is apt to forget that an idea or a line of conduct, which on the surface appears to be 'functionally autonomous' and to rest on 'contemporary motives' alone, may nevertheless be *unconsciously* connected with *unconscious* motives, whose roots go back to infancy and to our primitive biological endowment.

I have left to the last what many consider the most fatal objection of all to the doctrine of instincts. Dr. Vernon holds that "in the lower animals instincts are of the 'universal' type rather than of the 'individual difference type.'" If, therefore, instincts are inherited by man from his animal ancestors, they should be 'universal drives.' Yet how can this be possible when the so-called human instincts are "in many individuals not present at all, or only very weak," or, as Allport affirms, "completely lacking?" [(8) pp. 193, 112]. Accordingly, in the opinion of Dr. Vernon and other critics, "by far the strongest evidence against the doctrine of universal innate instincts is that provided by the observations of anthropologists." One tribe may be "almost entirely lacking in aggressive tendencies; another . . . in parental tendencies. . . . Warlike peoples, like the American Indians and the Maoris, have changed to peaceful communities in a few generations." Dr. Vernon is thus led to prefer Allport's conclusion to McDougall's, and to ascribe most of the behaviour attributed to common instincts to the individual "interests, attitudes, sentiments and complexes" set up by different cultural environments: thus "acquisitiveness seems universal to us only because it is part of our (Western) culture pattern" (this *Journal*, Vol. XII, pp. 3, 4, 9). Prof. Pear similarly argues that it would be "simpler to account for the types of motive in question *if and when they are present*, instead of assuming 'instincts' common to the species, and then having to explain away the exceptions when the 'instincts' fail to appear" [(11) p. 7].

But this is a criticism merely of the *popular* interpretation of adult and racial differences. It has nothing to do with the inheritance of aggressive or parental instincts by the tiny child. My answer would be that, in all probability, there is just as much bad temper among Maori or Red Indian babies now as a century ago; and the 'acquisitiveness' of capitalist countries, and the non-acquisitiveness of the Chinese, can have little or nothing to do with 'acquisitive' tendencies as shown by the infant.

There are no doubt alternative explanations. The eugenicist will suggest that, in their battles with their conquerors, the more pugnacious Maoris and Indians would probably have been killed off. The geneticist might attribute the lack of such instincts to the absence of some Mendelian factor; the psychoanalyst to unconscious repression or to conscious self-control. Yet I conceive it to be far more likely that, when people are described as "fearless," "sexless," "free from anger," "completely lacking in sex," the description is as inaccurate as the sweeping statements one still sometimes reads in teachers' reports: "intelligence nil"; "this child is totally devoid of brains"; "he has no memory at all." The existence of mental defectives does not prove that Spearman's *g* does not exist, or cannot be innate, but rather the reverse. Similarly, the 'innately fearless' warrior is merely one in whom the strength of the instinct of fear (or certain forms of it) is innately weaker than the average, not literally 'lacking.'

These views of mine, and particularly my conclusions about the relations of instinctive tendencies to childish delinquency, have led several of my critics to suppose that I attach exclusive importance, or at least predominant importance, to the inborn and unchanging elements of character as distinct from the acquired. It is argued that "if instinctive tendencies are innately determined . . . a child with a strong anger or sex propensity will retain these characteristics, however he is educated, just as a child with defective intelligence will always be dull"; and many will suppose that "nothing can be done about it" (Vernon, this *Journal*, Vol. XII, p. 6). In reply, may I refer to my repeated declarations that "temperament

and character are as amenable to training as intellectual disabilities are resistant," and that "provided we begin early, it is far easier to reform the delinquent than to educate the defective or the dull." Certainly, a reproach addressed to me by one of my correspondents seems to justify Dr. Vernon's worst fears. My "fatalistic generalisations," so the writer declares, "about the inborn tendencies of the neurotic and the criminal ignore all that Allport's book has taught us about the uniqueness of personality and the importance of contemporary motives." In reply, may I quote the following sentences of mine, written nearly twenty years ago? "Human instincts are pliant and uncertain tendencies, seeds that may never spring up." "Recent research . . . particularly upon delinquency and neurosis" (I was referring chiefly to my case-studies of London school-children) "seems to show very clearly that neither of these is due exclusively to inborn constitution, nor yet to shocks and maladjustments in the remote or immediate past, but may spring largely out of *contemporaneous* conditions and conflicts." "If we are to understand the complex motives of the older individual, we must investigate, not merely the innate basis of his actions, but also the newer incentives that he has acquired during the course of his personal history and as a result of social influences around him—his habits, his interests, his sentiments, his complexes, and his ideals." "Each child must be studied as a *unique* human being: there is no other way."¹

IV.—SUMMARY.

In conclusion, may I try to set down as definitely as I can what I take to be the upshot of the whole discussion? The following statements are intended to indicate the highest common denominator in the views of all the contributors, and, where conflict still exists, the opinion held by the majority.

A.—General psychology.

(1) Human beings, like other animals, inherit certain innate tendencies, which influence their everyday behaviour, at any rate during the earlier years of life. Four such tendencies (or groups of tendencies) are almost universally recognised—feeding, fighting, fear, and sex; there may be many others less easy to establish.

(2) On the conative side these innate tendencies are analogous to the innate 'abilities' which have replaced the old-fashioned 'faculties,' on the cognitive. They are not to be thought of as well-defined and separate entities, which can be counted once for all and catalogued in a definitive list, but rather as analogous to so-called 'group factors.' Some appear to be exceedingly general or complex; others relatively simple or specific. The particular classification adopted, therefore, like other classifications based on innate characteristics (e.g., the classifications of the animal or vegetable kingdom) must be largely a matter of convenience, the headings or labels overlapping one another, and the groups or clusters subdivisible at need into more specialised components.

(3) To depict such a tendency as a mechanical chain-reflex, caused by stimulating an isolated system of conduction-paths inherited as part of the structure of the nervous system, was no doubt a closer approximation to the truth than the *ad hoc* invention of a 'propensity' in the naive fashion of the older faculty-psychologists. But the reflex-theory in its turn is now almost universally held to be grossly inadequate as a description of the facts. What is inherited is not so much a localised neural structure, or an invariable pattern of action, but rather a 'determining tendency,' to be defined by its 'end' (or by a specific 'need,' 'goal,' 'condition of equilibrium,' 'behavioural function,' 'biological purpose' or 'consummation'—different schools prefer different descriptions), and not by any stereotyped set of movements or muscular contractions, to which such a tendency would lead in animals with more limited nervous systems.

(4) To designate these 'innate determining tendencies,' the term 'instinct' is the most appropriate and convenient, although in recent popular and scientific literature the word has become encrusted with inessential and misleading associations. With this definition it remains perfectly legitimate to speak of man, as well as the lowlier animals from which he has been evolved, as inheriting 'instincts.'

¹ "The Mental Differences between Individuals" (*Pres. Address, Sect. J., Brit. Ass., 1923*, pp. 219, 238). Cf. *The Young Delinquent*, pp. 25, 526, 610; *The Subnormal Mind*, p. 164, 185. May I beg my critic to read the entire passages from which these sentences are taken?

B.—Individual psychology.

(5) Differences in the *strength* of these tendencies may be hereditary or innate as well as the tendencies themselves. The individual variations in instinctive equipment may thus be as wide as the individual variations in intellectual equipment. But further research is urgently needed before the nature or importance of these differences can be definitely stated: (a) statistical techniques (factorial analysis of correlations), (b) experimental techniques (selective breeding, differential environmental training), and (c) qualitative analysis (introspective study of conscious processes, genetic study of unconscious processes) are methods of investigation that may most fruitfully be pursued, pending the slow accumulation of more direct evidence from (d) biological and physiological investigations.

(6) In man—and in the animals nearest to man, if not in all—consciousness, insight, intelligence, and the higher mental processes generally, appear to participate from the very outset, guiding, modifying, and integrating these instinctive activities even at their first manifestations. It follows (a) that what motivates any single human being is not a set of independent motives, each distinct from the others, and yet all of them the same in all of us, but the particular total pattern of organised tensions, set up between that individual and his environment or 'field'; (b) that the contrast between what is inherited and what is acquired rests on a purely abstract distinction between two broad contributory components, and does not imply any clear-cut cleavage between two concrete layers or 'levels' in the central nervous system (as McDougall and others seem at times to convey).

(7) In man the modifications and elaborations of these instinctive tendencies, produced by personal experience, are more various, more numerous, and more far-reaching than in any other animal. Hence, in the older child as compared with the younger, in the more intelligent or well-integrated individual as compared with the less intelligent or the more unstable, and possibly in members of more civilised nations or more cultured families as compared with members of primitive races or of families living under primitive conditions, the motives and the interests acquired by the individual dominate more and more over the innate impulses, which are common to all. Thus, at one end of the range, we may find individuals living their lives on a semi-instinctive plane, not far above that of the higher domesticated mammals, and, at the other, individuals whose conduct at the adult stage is, to all outward seeming, almost devoid of instinctive characteristics.

(8) It follows that, in studying young children, or older persons who have partly regressed, or perhaps never risen above, the simple infantile level, the assessment of the strength of these instinctive tendencies is an essential task for the psychological observer. In studying the more normal adult the assessment of acquired interests, motives, and ideals may be far more important; here, indeed, lies a field of research which, as is generally conceded, has been sadly neglected hitherto. In every person, and particularly in the intelligent adult, the way these innate and other tendencies have been progressively differentiated and organised is unique. Hence each individual personality must be studied in and for itself.

(9) The doctrine of human instincts has already proved fruitful and suggestive in almost every branch of applied psychology—educational, industrial, social, and pathological. It must be owned that the popular and hasty invocation of so-called instincts by non-professional psychologists, in discussions on psychoneurosis, criminology, sociology, ethnology, economics, salesmanship and advertising, and the like, has led to many widespread misconceptions. But the misuse of a term by the non-scientific need not discredit that term when scientifically defined and cautiously employed.

C.—Final conclusions.

(10) All, or nearly all, the criticisms urged against the more scientific exponents of human instincts may be accepted without surrendering the essential elements in that doctrine. Much of the controversy in the past has admittedly been chiefly verbal or metaphysical. About the relevant facts there now seems little conflict of opinion. The

outstanding differences appear rather to consist in differences about the relative emphasis to be placed upon certain admitted facts and admissible concepts, and about the best ways of avoiding the misleading implications of the traditional terms ('instinct,' 'purpose,' 'consciousness,' etc.).

(11) The doctrine of human instincts has become especially associated with the exposition given by McDougall. His account was essentially an attempt to systematise previous and current opinion on the subject in this country. It underwent frequent changes during his own lifetime; and, after a lapse of over thirty years, is naturally in need of correction or revision. In particular, the relation of instinctive tendencies to what are loosely called emotions appears far more intricate than McDougall's scheme of one-one correlation would suggest; but this is a topic on which the symposiasts have not explicitly stated their views.

(12) It is generally agreed that McDougall's version was in many ways oversimplified and over-stated. But his two main tenets—that man, in common with other animals, inherits certain 'dispositions' or 'tendencies' of biological importance, and that these tendencies are essentially conative or purposive—seem to have survived the rigorous criticism to which they have been subjected by the environmentalist school on the one hand and the behaviourist school on the other.

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A STUDY OF THE TRAINING COLLEGE FINAL TEACHING MARK AS A CRITERION OF FUTURE SUCCESS IN THE TEACHING PROFESSION.

By WILLIAM B. TUDHOPE.

PART II.

III.—*Study of individual cases*: (1) *Consideration of cases which present striking similarity*; (2) *Consideration of discrepant cases*. IV.—*Conclusions*: (1) *Detailed conclusions*; (2) *General considerations*.

III.—STUDY OF INDIVIDUAL CASES.

(1) *Consideration of cases which present striking similarity.*

Before starting on a detailed consideration of marked variations in the college final teaching mark and the inspector's assessment, I was interested to observe some of the similarities between the college final school practice report and the report of an inspector made at least three years later. Miss B.G.¹ was described in her final school practice report as being "keenly interested in her work—a capable teacher who would be an asset on any school staff," with a teaching mark of B-; an inspector visited her while she was evacuated with her school to the country and saw the fulfilment of the earlier prophecy, describing her as "seen on evacuation—has adapted herself well to country conditions" and assessing her teaching as B-. Miss M.I., in her college report, was "a teacher with good ideas, can organize; a fine type, reliable, cheerful and willing," being assessed as B-; when visited by an inspector she was in charge of an "A" stream top class of a junior mixed department and was described as "a very capable teacher, who seems to have unlimited energy and enthusiasm," being regarded as well worth a mark of B-. Miss N.K. was described in her college report as "capable of good average teaching, interested in her work," her mark being C+; she showed her interest by taking additional courses in art and physical training after she had left college, and in the inspector's report she still earns her C+, no more, though working under most favourable conditions. Miss M.A., who was described in her college report as being "quiet in manner, cautious in her judgments, and wise in her decisions, patient and sympathetic," and was assessed as a C teacher, earns the following comment from an inspector: "I found her safe, a good class manager, but I would not call her in any way outstanding—I regard C as her mark."

In the last paragraph only women's reports were considered. It is appropriate to devote some consideration to the similarity in men's reports, as given first by the college and later by an inspector. Mr. H.E. was described in his college report as "an earnest and patient teacher" with a mark of C; an inspector describes him as "a very earnest, conscientious teacher—probably knows his subject well, but just cannot get it across," and rates him as C. Mr. B.F. was described in his college report as "a thoughtful and hardworking teacher, showing industry and intelligence—good powers of class control and maintains well the interests of his pupils," his mark being B-; an inspector found "the class well grouped for reading and each group working intently—change-over for history quick and orderly—gets down to children's level and holds their interest," and gave him a teaching mark of B-. Mr. B.E. was at college "a bright, sanguine and energetic teacher, with a good influence over his pupils, whom he deals with tactfully and manages with care—will make a good teacher," and given a mark of B+; when seen by an inspector he was teaching under very favourable conditions and gained the following report: "teaching clear and very thorough, makes sure every possible difficulty is clear to all before proceeding—this combined with a very pleasant, bright manner, gains the confidence of the duller children as well as of the brighter ones—the whole class is alive; I rate him as B+." Mr. H.D. in his college report, was "a good sound, capable teacher, who will continue to improve" with a mark of B-; an inspector described him as a "capable teacher who is worth B- and should in time be worth the full B." Mr. C.W.E. obtained a college teaching mark of A- and was described as "a first class teacher, highly efficient"; an inspector assessed him as A- and described him as "a very efficient teacher who has done exceedingly well." Mr. F.H. was only a C teacher at college, where his report said that "he shows ability, is thorough, painstaking and industrious"; an inspector still rated him as a C teacher and commented that he was "a conscientious teacher, willing to experiment, but lacking in personality and drive."

¹ All initials are fictitious and used for record purposes only.

Many other similar pairs of reports could be quoted, but these perhaps will suffice to provide instances not only of the close agreement between the pairs of marks themselves, but also of the similarity in the analysis of personal qualities which is embodied in the reports. In many cases the inspector's report, which we must remember was written at a time when the teacher concerned had been teaching for at least three years, mentions the qualities which had already featured in the college report, often using exactly the same terms as had been employed by the college supervisor; in many more cases, the inspector's report gives concrete instances which indicate the possession of the abstract qualities of temperament and character already mentioned in the college report. There are, certainly, few, if any, indications in the inspectors' reports that the wider opportunities which classroom practice has brought and the increased knowledge of men and affairs have revealed unsuspected gifts of personality. Rather does it seem that the teacher, while a student at college on final school practice, has revealed to the experienced eye of his supervisor almost the whole range of his personal qualities, with the result that the supervisor is able not merely to estimate the present teaching ability of the student but also to take into account in determining the final mark the presumed effect of additional experience and additional practice. During periods of final school practice several inspectors have told me that they base their mark on aptitudes and potentialities as much as on an objective estimate of a student's present teaching ability, and while this is certainly not the point of view of all college supervisors, it is apparently an unrealised influence in determining their final decision. An example may help to illustrate this point. A teacher, who in his final college report, had been given a mark of B- and had been described as "a most conscientious man, competent and thorough," had been visited by an inspector quite early in his teaching career and had been given a mark of C; twelve months later, the same inspector visited the man again to see him in connection with this enquiry and was interested to find that in the interval he had much improved and decided to assess his teaching as B-, the same as the college mark. It is surely a reasonable assumption that the man's college mark was based on potentialities as much as on present ability, potentialities which had not yet been fully realised when the inspector first visited him but which were already bearing fruit on the occasion of the second visit, with the result that the inspector was able to raise his original assessment and award a mark which coincided exactly with that awarded as the final teaching mark by the college authorities.

The N.U.T. Report on the training of teachers, which I have already mentioned and on one or two occasions quoted, declares that "the truth about the college teaching mark is that it does no more than indicate to the Board of Education the opinion of the college about the student's teaching capacity towards the end of his college course; it cannot predict with certainty his future success or non-success." It may perhaps be quibbling to urge that if the term "capacity" is used in its normal sense, the student's teaching capacity is constant, and that if the opinion of the college concerning the student's teaching capacity is reasonably correct at the time when it is given, as the report apparently does not deny, then that opinion will predict with a reasonable measure of certainty the future success or non-success of the teacher concerned. It is the second part of the statement to which we must take exception. It seeks to lay down as true a point of view which is just as much a matter of opinion as the report itself would make the college teaching mark out to be; it neither mentions the inspired source of this authoritative statement nor brings forward any evidence to support it. We must admit that the correlation obtained between college estimates of teaching ability and later assessments made by His Majesty's inspectors is not a perfect correlation, but at the same time it is sufficiently high to lead us to believe that the college teaching mark can predict with a high degree of reliability the ultimate success or non-success of a teacher. The report uses a most debatable premiss to argue that the college teaching mark should become purely an examination mark—thereby revealing, incidentally, that the mark is regarded as reasonably accurate at the time it is given—and should not be revealed to local education committees, who would thus in making their appointments be obliged to find a better basis of choice. I am, however, not concerned at the moment with a consideration of the uses to which the college final teaching mark should or should not be put. When we have cast some light on the circumstances which tend to lessen the correlation and succeeded in showing under what conditions the college teaching mark cannot be regarded as giving an accurate prediction of future success or non-success, then it will be more appropriate to discuss the question of the use to which such a means of prediction can be put. It is now proposed therefore to consider individual cases, where the college mark has either been surpassed by later performance or has been found to convey an exaggerated impression of ultimate teaching ability, in order that any possible reasons for this discrepancy may be brought to light.

(2) *Consideration of discrepant cases.*

The first example of a teacher whose college final teaching mark was apparently not justified by her later performance as assessed by an inspector after several years' experience, revealed a significant point. Miss Y.E.J., trained at college for junior and senior school work, gained a final teaching mark of B+, and was described in her final school practice report as "intelligent and interested, with ideas of her own—will have a wholesome influence on senior girls, for whom she is particularly suited;" an inspector visited her and reported that "she was trained for seniors and has been teaching juniors, but is now teaching infants—has tackled the problem of teaching infants cheerfully and quite successfully, though it is obvious that she is not an infant teacher—pleasant, sympathetic manner with the children and hides her nervousness with a brisk and confident manner," and gave her a teaching mark of B-. A possible reason for the discrepancy between the college final teaching mark and the inspector's later assessment is not far to seek, and I proceeded to look for further examples of the same point at issue. Miss H.S. gained a college teaching mark of B-, and was reported as being "a quiet steady worker, of pleasing personality, particularly suited for junior classes"; an inspector, giving her a teaching mark of C+, reports that "I have already seen her several times in the infant department—her manner is rather heavy and she shows no signs of being more than a C+ teacher," the report concerning a teacher who had trained for junior and senior school work and had been seen teaching infants. Mr. R.E.G. was described in his college report as "a good type, alert, resourceful and tactful, methods show originality, pleasant and easy manner before the class," being assessed as a B+ teacher. An inspector found four years later exactly the same qualities displayed, reporting that "his own class was at woodwork, and therefore at a moment's notice found himself another class to take and within five minutes had settled down to write a letter of application; a very pleasant and resourceful teacher, who has a nice manner with the children, but his teaching just seemed to lack the life and energy he himself appears to possess; this, however, may have been due to being caught unawares and having to take a class not in his own department," a mark of B- being awarded.

Surely in the final remark quoted from the inspector's report at the end of the last paragraph we find the reason for such discrepancies in the two teaching assessments as we have discussed, and of which it is not difficult to find still further examples. It is interesting to remember that in the final school practice of the college involved in this enquiry, the students are allowed to choose the department and even on occasion the age of children for the period of practice during which the final teaching mark is to be assessed, having on their first two periods of practice been given experience under intentionally varied departments and ages. It is only to be expected that under these conditions the students will choose the conditions as regards age which have already most appealed to them as a result of both the theoretical and practical work already done and which have given them the greatest measure of success and satisfaction, and therefore we may assume that the students will be teaching as near to their best as is possible for them to do. Accordingly, it is not surprising that some students in their later career do not fulfil the earlier promise shown on the final period of school practice, when they are required to teach in a department for which they may have had no specific training or for which they may have neither the aptitude nor the inclination. The examples quoted above of the women who trained for junior and senior school work and were actually recommended for one particular branch of that work, and who nevertheless were required for some reason or other to teach infants, are most glaring examples of the squandering of real ability which might have been put to so much better use when diverted into the right channel, though the same squandering of ability is to be seen when a man who has shown his ability and inclination for the work of a senior department is required to teach juniors, or when a man who has been recommended for junior school work is entrusted with senior school work. When a man or a woman has shown a certain teaching ability under conditions which he has voluntarily chosen as making the greatest appeal to his own interests, and as being the most suitable sphere for the exercise of such gifts of temperament, intelligence and specific abilities as he feels himself to possess, it is no condemnation of the reliability of the college final teaching mark if it is later found that the teaching ability of the individual in question is less when he is required to teach under very different circumstances. Rather is it a condemnation of those whose business it should be to ascertain under what conditions the final college assessment was made and what special recommendations were made by the college authorities on that occasion; by neglecting to do so and by failing to ensure similar conditions as regards the department and age of children for the teacher when he enters upon a permanent post, they are responsible for a great deal of waste of potentially valuable material which could accomplish so much more under more congenial conditions. A report written by an inspector on a teacher

who had been assessed as a B teacher at college, implicitly recognises the truth of this argument ; he writes that " until the last few months this teacher has been dealing with a class of infants when she really wanted juniors—now she has a class of juniors and should prove a B teacher," insinuating of course that she had not been a B teacher when she was dealing with the class of infants.

The N.U.T. Report on the training of teachers urges strongly that " local education authorities should make up their lists of first appointments with actual vacancies in mind, so that young teachers may have an opportunity of working in the type of school for which they have special aptitudes." It is obvious that the arguments discussed and the examples of real cases quoted in the preceding paragraphs lend strong support to this argument. There is a very real danger that a young teacher who is required to teach in a department or a type of school which he did not choose for his final teaching practice at college and which therefore will not necessarily offer the same opportunities for the exercise of such teaching ability as he possesses, may not fulfil the promise shown on his final period of school practice, though at the same time we must note that my records contain examples of teachers who still maintained their early promise despite the different conditions regarding department or type of school. In such cases, however, we are justified in wondering whether there is not still a waste of ability since such teachers might under more congenial conditions have not only fulfilled their early promise but even surpassed it by their ultimate success. It is, of course, likely that a teacher who is not showing his real ability in uncongenial conditions will reveal it on a later occasion when he is transferred to the department or type of school for which he is more fitted. On the other hand, if such transference is too long delayed, it is equally likely that the teacher will lose much of his interest and enthusiasm in his work and be content to sink into a rut of habits, from which a subsequent transference may be unable to dislodge him. Herein, it seems to me, lies one of the dangers of the by no means unusual practice of sending young teachers on supply work, with the result that they may be called to fill casual vacancies every few weeks and be required to work in as many as sixty different schools during the course of a year. On the other hand, it is not impossible that teachers may be more successful in a department or type of school other than that in which they did their final school practice or for which they may have been recommended, but certainly no such case can be quoted from my records.

The fact that varying conditions as regards the department and type of school do undoubtedly affect the agreement between the college teaching mark and later assessment of teaching ability, suggests that other conditions, different in the permanent teaching post from those obtaining on the period of final school practice, may also affect this agreement ; the records were next examined with a view to discovering such cases. A pointer was found first in the case of Miss L.M., who obtained a college teaching mark of B+ and was described as " sympathetic, a good organiser, rather shy, but very conscientious, bright and lively—does her best for every individual child ; " an inspector, on the other hand, assessed her teaching as B and reported that " she is bright and lively, pleasant with the children, and keeps them busy and interested and has got some good work from them—she appears quite confident in spite of her nervousness." It transpired that this teacher was seen with a small group of children on " home service," and it is very possible that these strange conditions lay at the root of the discrepancy between the two teaching assessments. Another case is even more interesting and significant. Miss H.M. was described in her college report as " an attractive and capable teacher, full of enthusiasm, but spoilt at home and lacks stamina," being assessed as a B- teacher ; the inspector's report speaks for itself, saying that " when I saw this teacher her work was only in the C class, but she has been seen previously and was then a B- : the school is going through a difficult time and this may account for the drop." This last sentence in the report almost certainly gives the reason for the drop, and it is interesting to observe how the prophecy of lack of stamina, made in the college report, was later fulfilled in face of unexpected difficulties. It must be admitted that such cases are rare in the records available, and further the difficult conditions which cause this drop in the teaching mark are such as would not normally confront a teacher but are due to the present very abnormal circumstances which confront education in time of war. It is refreshing to see that an upheaval, such as has been so frequently caused by war conditions, does so seldom cause this drop, and that examples are not entirely lacking where the strange conditions have brought forth unsuspected virtues which in normal times would have remained unsuspected. Mr. G.C.C. obtained a college teaching mark of C and was described as " hardworking and intelligent—should make a teacher of average ability ; " and an inspector was able to assess his teaching at C+ and report that " he is not teaching in his own school, but has settled down well on a temporary staff and has shown some initiative in dealing with the present situation." It will be even more interesting to see

whether with a return to more normal conditions and in the absence of the stimulus which war conditions apparently have brought into action, this teacher will tend to return to his original C mark.

The attitude of the head master is mentioned in several reports. Mr. H.G. was described in his college teaching report as "alert and energetic—his enthusiasm and thoroughness should help him to become a first-class teacher," being assessed as a B+ teacher; an inspector rates his teaching as B, and reports that "under a different head master he might well be B+; the head master has definite and rather limited ideas to which Mr. H.G. subscribes apparently willingly." The attitude of the head teacher towards the young teacher is especially important, and the need for sympathetic help and guidance which the young teacher's first post of full responsibility makes necessary can hardly be overstressed; indeed, the report on the training of teachers goes so far as to urge that the head teacher should not himself be in charge of a class in order that he may have the opportunity to give this help and guidance to those who require it. Many students leave college, sometimes fired with an over-hasty zeal and sometimes inspired by somewhat unpractical ideals, whose teaching efficiency during the period of their adaptation to the realities, and sometimes to the grim realities, of real teaching may be impaired and who can be helped over a difficult time of readjustment by the understanding and enlightened encouragement of their head teacher. An actual example of this can be quoted by reference to Miss J.E., who obtained a college teaching mark of C+, and was described as "cheerful, enthusiastic, possesses ideals and will develop;" an inspector reported that "the compromise between her ideals and what was expected in actual class teaching in this mixed junior school proved somewhat difficult, but she is now proving well worth a C+ mark." We must believe that this is no isolated case, and that many, if not most, young teachers have to pass through this stage of development; the harm that can be done by the wrong head teacher in this critical time in causing disappointment and disillusionment, loss of enthusiasm and discarding of ideals, can be easily imagined. It is interesting in this connection to recall the suggestion made by the Departmental Committee on the Training of Teachers in 1925, that suitable schools should be selected and that as far as possible probationary teachers should go to no others, which is almost exactly the effect of the system adopted in Scotland in 1924, when lists of approved schools were framed for each area with an indication of the number of probationers that might be allocated to each. It is to be regretted that for one reason or another, largely, I imagine, because of the failure on the part of responsible bodies to realise the importance and urgency of the problem, few similar steps have been taken in England and Wales.

In the final school practice report a student who has done outstanding work in a special subject may be particularly recommended for specialisation in that subject. For example, Mr. W.C.M., with a teaching mark of B+, was described as "a man who will make an efficient member of a school staff, particularly in the teaching of art, in which he has had special practice." The report of the H.M.I. explains that "this teacher specialised in art and handwork before the war, now he has to take all subjects as present organisation will not allow of specialisation. Before the war I have given him a mark of B+, but he is only C on his other subjects, and I assess him now at B." In this case it is obvious that the removal of the opportunity for specialisation denied the teacher the opportunity of doing his best work and also, we may well believe, caused a certain loss of incentive and a corresponding decrease of interest, which would perhaps render his ordinary teaching in other subjects less effective. Another case available illustrates the same point from a different aspect. Miss B.T. was described in her final teaching report as "a capable rather than an inspiring teacher, with special interest and ability in physical training," and assessed as B-. The H.M.I. reported that "Miss B.T. is teaching in a good, sympathetic school, and has been given charge of physical training throughout the school; I assess her as B and she may well become B+ in time." Here the opportunity of following out the special interest has had repercussions on her whole work, presumably giving an added interest and incentive not only in the case of the special subject, but in all branches of her teaching. It may be suggested that students who show exceptional ability in a special subject, such as art, music, physical training, etc., might well be given a supplementary teaching mark, applicable to work in the special subject alone, where successful teaching is to such a large extent dependent on a specialised interest and ability. Further, it is likely that education committees who accept and act upon such recommendations from the training college will enhance the all-round value of the teacher in question, while those who ignore it will certainly waste a valuable talent and probably cause an all-round decrease in teaching efficiency.

In two interesting cases, both concerning women teachers, a reason for the discrepancy between the two sets of teaching marks was very obvious, but could not apparently be paralleled

in the case of any man. Miss A.N.O., with a college teaching mark of B, was described as "a student of definite teaching ability, whose work is well thought out and who has made some extremely good pieces of apparatus." An inspector reported that "Miss A.N.O.'s apparatus is very good indeed and she seems to have ability. Yet neither her appearance nor her handling of the class places her outside the C class—she is pleasant but lackadaisical, as if her main interest lies elsewhere." Further enquiry led to the discovery of some interesting information: "Miss A.N.O. is engaged to be married; the engagement is not a recently announced one and there is no suggestion that the wedding is expected soon." The second case bears on a similar problem, again from a slightly different aspect. Miss S.M.C. was regarded at college as a teacher of average ability and given a teaching mark of C. The inspector who visited her gave her a teaching mark of "B at least," and reported that "the head master she was with until evacuation took place considers her first-rate; I should put her in the B+ class as far as art, handwork, and contact with the children are concerned—she has plenty of initiative." Again, further enquiry revealed some interesting information: "as a result of an unhappy pupil-teacher year the student found college uncongenial and came out with a low mark." It is fairly obvious that in each of these cases some emotional strain has interfered with teaching efficiency at the period when one or other of the teaching marks was awarded. I have scrutinised the reports on men teachers very carefully for any comparable example, and the nearest approach seems to occur in the case of Mr. G.S., who was given a college teaching mark of B and was assessed by an H.M.I. as C, being described as "conscientious but very dull; is teaching in a very humdrum school, where the atmosphere is not strikingly happy." There is, however, no clear evidence that the teacher in question is either unhappy or dissatisfied, and it is more likely that this case must be regarded as another example of the influence of the head master on the efficiency of his staff, a point which has been discussed in a previous paragraph.

The majority of the cases so far discussed have presented examples of teachers whose later teaching ability fell short of the promise displayed in their final period of school practice, though at the same time interesting examples of the converse have been included. Let us turn our attention to a consideration of teachers who have been able to surpass the earlier promise revealed in their college career, noticing at the same time that of the ninety-six teachers concerned in this enquiry only in the case of four did the improvement involve a change of class, e.g., from C+ to B-, while of the remaining ten cases who showed improvement nine improved by one step in the same class, e.g., from C to C+ or from B- to B. The most amazing improvement is shown in the case of Miss C.E.D., who was given a college teaching mark of C- and was assessed by an inspector as B, being at that time head mistress of "a good, happy school." Speculation is tempting, but pointless in the absence of further information. At the same time, to balance this example, we may quote the case of Mr. W.S.T., who received a college teaching mark of B and was assessed by an H.M.I. as B-, being then head master of a school! Detailed reports are not available for all of the remaining cases, but where they are it is evident that exceptionally good conditions have favoured the improvement. Two examples may be quoted. In the first case, Miss H.C.B. was described in her college report as "at her best in the classroom—keenly interested, energetic and organises well," and given a teaching mark of B-. The inspector described her as "a promising teacher, who has been transferred to a very good school from a small, unprogressive church school," assessing her as B. In the second case, Miss R.S.C., who, according to her college report, "is a bright, attractive teacher, resourceful and enterprising, who will obtain good results in a happy way," had her teaching mark raised from the college assessment of B to B+ by an inspector, who reported that she was teaching in a very good senior girls' school and proving a most capable teacher.¹

IV.—CONCLUSIONS.

(1) *Detailed conclusions.*

Before proceeding to a consideration of the general conclusions which may be drawn from the facts revealed in this enquiry, it may be well to utter a caution. The enquiry was conducted under war-time conditions and we cannot disregard the possibility that teachers were suffering from the circumstances in which they were seen and assessed by an H.M.I. Many teachers had been evacuated once or even twice, others were visited while on evacuation duties, still others were seen while teaching in schools or in departments other than their own. Further, many teachers were doubtless handicapped by lack of materials and by changes

¹ There are, of course, other possible reasons for discrepancies; for example, an error on the part of the inspector or on the part of the training college, or a real change in the teacher himself, but it is obviously impossible to produce evidence of the operation of such reasons,

in organisation which either curtailed or rendered entirely impossible specialisation in these subjects in which their ability was most outstanding. Altogether they were working under the most unsettled and unsettling conditions. Some teachers may have been disappointed and worried, and the subsequent loss of enthusiasm may have rendered their teaching the less effective; others may have been stimulated and made the more eager just because of the magnitude of the problems confronting them. At the same time, war conditions have merely caused in an aggravated form many of the problems and difficulties which may confront teachers even under peace-time conditions and so have been able to show us in an almost unmistakable way the results which such problems and difficulties may have in rendering the teacher less efficient. It is also important to bear in mind the fact that in very many cases the inspectors were visiting a teacher with whose work they were already familiar before the outbreak of war and, in addition, had access to the opinion of a head master or head mistress well acquainted with the teacher under more normal conditions.

What then do the results of the enquiry, conducted under such circumstances, reveal? In the first place, they reveal the significant fact that of a group of ninety-six men and women teachers with at least three years' teaching experience, teaching ability as assessed by an H.M.I., was correctly prognosticated by the training college final teaching mark in almost two-thirds of the cases.

Further, in the case of more than four-fifths of the total number of teachers concerned, the literal class in which the teacher had been placed by his college final teaching mark was confirmed by the inspector's later assessment.

More generally there is a high correlation between teaching ability as measured by the college final mark and teaching ability as measured after at least three years' experience by an H.M.I., the correlation coefficient being .81 for the whole group, .84 for the men teachers, and .77 for the women teachers.

Detailed study of individual cases suggests various reasons for discrepancies between the two sets of marks. Firstly, teachers who are required to teach in a school or department other than that for which they have been trained and recommended may fail to fulfil their earlier promise. Secondly, very abnormal conditions may have an effect on the teaching ability, lowering their mark in some cases and perhaps in the case of the more adventurous and less conventional teacher raising it. Thirdly, the attitude of the head and the general atmosphere of the school may exert a definite influence, lowering the mark when the influence is bad and raising it when the influence is good. Fourthly, the opportunity to specialise in art, physical training, etc., in cases where special aptitude is shown in these subjects, may have an influence not merely on the teaching of these special subjects, but on the work of the teacher as a whole. Fifthly, emotional strain, to which apparently women teachers are more prone than men, may impair the efficiency of the teacher, either for a time or perhaps more permanently.

(2) *General considerations.*

It was not at the beginning of this enquiry, nor is it yet my purpose, to expound under what circumstances the college final teaching mark should be revealed or how it should be used. Rather did I wish to gain some objective evidence as to the worth of this mark as a reliable indication of ultimate teaching ability, and this evidence, gained within the limitations imposed by war-time conditions, I have already submitted. At the same time, certain considerations thrust themselves forward in my mind, the practical implications of which may be of interest if not of actual use. In the first place, the persons who framed the sentences quoted on my first page from the report on the training of teachers would seem themselves to have no very clear idea of the worth of the college final teaching mark as a criterion of ultimate teaching ability. It seems to me that education authorities are quite justified in making enquiries about this teaching mark in appointing young teachers and in tending to restrict their choice to students who have obtained an "A" or a "B" teaching mark, since at least 80 per cent of them will ultimately justify this category. If there are sufficient teachers of "A" or "B" calibre available, it seems reasonable that education authorities should choose them; if there are not, then the turn of teachers in lower categories, over 80 per cent of whom will ultimately remain in those categories, will come, as indeed under normal conditions it does come. It is not, however, my intention to urge that the college teaching mark continue to be made available to appointing bodies, not on the grounds that "it must leave out of account hidden and imponderable qualities which may be of even greater value in the making of a successful teacher," but for entirely different reasons. If a teacher's ultimate teaching ability is to do justice to his college teaching mark, the general conditions as regards type of school, age of children, etc., must be comparable to those under which the college assessment was made,

and yet it cannot be denied that education authorities have on many occasions either directly appointed or approved without protest the appointment of teachers to positions where they were denied the opportunity of working in the type of school or of teaching the particular age of children or of specialising in the particular subjects, for which they had been trained and in many cases specially recommended. There seems to be no good reason why the college teaching mark should not be made available to authorities, as long as the authorities are merely responsible for making appointments to their staff and not to any particular vacancy; appointments to definite posts should, on the other hand, be made, not by a large and cumbersome body of people who probably have little clear idea of the detailed requirements of the post, but by a small sub-committee on which both local inspectors and head teachers are represented, the members of which understand in detail the requirements of the post and the special qualifications of the persons contemplated for appointment to it. A less careful observance of the details which supplement the college teaching mark is likely to decrease the efficiency of the teacher concerned and render him not only less successful but also less happy in his work.

In 1920 the Board of Education issued Circular 1176, which concluded with this statement: "The training colleges can and do send out young men and women with a taste and a liking for teaching and with some vision and ambitions, all of which are all too easily prone to fade under discouragement." The report on the training of teachers already referred to recommends that during the probationary year "the conditions of the school should be favourable and the head teacher sympathetic and prepared to give the young teacher that further guidance and help in his profession which his first post of full responsibility makes necessary." The fact that this recommendation has to be made at all involves an implicit suggestion that there do exist schools where these conditions are not fulfilled, and in the light of the cases already studied of teachers who have failed to live up to their earlier promise because of the attitude of the head teacher, I would suggest that such schools are unsuitable not only for young teachers on probation but for any teacher at all. Since it is likely that the wrong type of head teacher will exercise a harmful effect on the teaching efficiency of some members of his staff, it is of great importance that attention be paid to this aspect of the question in appointing head teachers, so that those who are appointed will be sympathetic and prepared to give all the members of their staff such help and guidance as they can and become to them a vital source of example and inspiration. The danger of making the wrong choice was perhaps never more acute than it is under present conditions, which would seem to demand that a head teacher must be first and foremost an administrator, able and willing to discharge the ever increasing burden of clerical duties that fall to his lot, and only secondly the guide, philosopher and friend of those who look to him for sympathy and encouragement and inspiration. They should not and must not look in vain.

One last point remains. In this enquiry I have been concerned with teaching ability. At the same time, the teaching profession, like any other profession which involves the formation of human relationships, requires further qualities of character and temperament in addition to the definite capacity necessary to meet the explicit demands of the profession. These further qualities are all the more important in the case of a teacher, in so far as the human relationships concern children whose moral and social development will undoubtedly be influenced by the influence of the teacher exerted either consciously and intentionally or unconsciously and unintentionally. Therefore, to my mind, it is essential that every teacher possess these additional general qualifications for his job, the absence of which renders the person quite unsuitable as a candidate for the teaching profession, but the presence of which cannot compensate to any appreciable extent for mediocre or poor teaching ability. In order that appointing bodies may not have to choose between, say, a B teacher whose general suitability for the profession is less than average and a C teacher whose general suitability is above average, the teaching profession as a whole, and particularly the elementary branch, must be made more attractive and the dignity and social value of the work more generally realised. The authorities responsible for the training of men and women for the teaching profession will then be able to exercise more ruthlessness in their acceptance or rejection of candidates for the profession, so that those eventually qualified for the most responsible work that any man or woman can do will be qualified in every important respect. But here is another problem.

EFFECTS OF AIR RAIDS ON SCHOOL CHILDREN.

By AGNES G. McCLURE.

I.—*Children's behaviour in war-time as a field for psychological investigation.* II.—*Method of investigation: (a) The questionnaire; (b) Selection of sample of schools and teachers.* III.—*Results: (a) Grouped by ages; (b) Grouped by districts—bombed and fairly safe.* IV.—*Conclusions.* V.—*References.*

I.—CHILDREN'S BEHAVIOUR IN WAR-TIME AS A FIELD FOR PSYCHOLOGICAL INVESTIGATION.

THIS is probably the first war in history in which the Government of the country has from the outset concerned itself with special and separate provision for children with the object of safeguarding their physical safety and their nutritional needs. In the first years of the war these aspects of the lives of children gained so much attention that provision for intellectual development and emotional security were rather overlooked.

By 1941 a considerable body of evidence on the reactions of children in war-time had been gathered by local health authorities and others, chiefly those working in reception areas. Much of the published material dealt with children in those areas who had proved difficult or who had not settled well (e.g., *Cambridge Evacuation Survey*).

But by the spring of 1941 it had become apparent that the larger proportion¹ of the school population of each of the great cities except London covered by the evacuation scheme had settled down to live in the evacuation areas rather than in the reception areas. Child Guidance Clinics were in a position to come in contact with the reactions of children to severe bombing in the great cities. A surprisingly small number of children was referred in the first six months of 1941 to the City of Birmingham Child Guidance Clinic for problems which seemed to be directly connected with the effects of heavy raids.

In Bristol the Child Guidance Clinic staff undertook at the end of 1940 an investigation into post-raid effects on school children. A sample of the school population numbering 8,000 was investigated, and from this came the referral of 320 cases which showed either physical or psychological distress after the raids. At that time Bristol was still not officially an evacuation area. The magnitude of the figures for the disturbance among children may be interpreted as an argument for the wisdom of the Government policy of evacuation as pursued elsewhere. This point might have been illuminated most valuably if an investigation similar to that of Bristol had been undertaken at exactly the same time in one of the cities where a normal evacuation policy had been pursued.

Thus by the spring of 1941 available data covered children in reception areas and in a great city which had not been evacuated. It therefore seemed of interest to discover what were the post-raid effects observable in the school population which had elected to remain in an evacuation area. Could a general effect be observed or did the mass of children seem to remain the same? If a general effect was observable did it differ in kind or degree from one age group to another? Was there any difference in apparent effect in the badly damaged areas of the city (in some of which the school buildings had been destroyed) and in the comparatively unharmed areas?

¹ The actual percentage of total elementary school population in reception areas in March, 1941, varies in the largest cities from approximately 10 per cent to approximately 50 per cent with the exception of London.

II.—METHOD OF INVESTIGATION.

Since the teachers of a city know their pupils fairly intimately, and the school itself provides a controlled environment by virtue of its routine, its social group, etc., they seemed well qualified to give an estimate of the effects of air raids upon the behaviour of children in their care.

The questionnaire method was chosen for obtaining this estimate, as most teachers have neither time nor clinical training to make detailed observations. It was hoped that by careful construction of the questionnaire and by sampling a large body of opinion, unselected within the prescribed limits, the subjective inaccuracy inherent in the questionnaire method would be reduced to a minimum.

(a) *The questionnaire.*—This consisted of seventeen items, the first thirteen of which related to observable behaviour, e.g., since the heavy raids in Birmingham :

- (1) The children seem more fidgety, less fidgety, just the same ;
- (2) The children are less quarrelsome, more quarrelsome, just the same.

Questions 3–13, inclusive, dealt with loss of books, money, etc. ; going to lavatory ; crying about trifles ; noisiness ; damage to school property ; ‘interest in smut’ as shown in drawings, dirty stories, etc. ; personal dirtiness ; unpunctuality ; physical weariness ; want of concentration ; retention of lessons taught.

Questions 14 and 15 dealt with parents’ visits to school and the reasons for coming ; Question 16 gave the age range of the pupils taught by the questionee : Question 17 asked for any additional information.

There were three possible replies to each question : more, same, and less. The instructions to teachers were : “ Please underline the reply with which you agree. Do not sign this questionnaire.”

The items of behaviour listed in the questionnaire were chosen because they related to behaviour that could be readily observed at an objective level and that permitted of a further interpretation in the light of clinical experience. Frequency of micturition, fidgetiness, tearfulness and the tendency to lose things are often components in the clinical picture of the child in an anxiety state, as distinct from the child suffering from an anxiety neurosis. Quarrelsomeness, noisiness, interest in ‘smut’ and damage to school property give the clinical picture of a child who has regressed to a more primitive level, where for some reason the balance between the primitive drives and the social demands is not adequately maintained. Dr. Mons notes such a behaviour pattern in a number of raid-shocked children received in reception areas.

The remaining questions dealt with observable behaviour related more directly to intellectual attitudes, and to physical well-being. It was hoped that the ranking of the teachers’ replies might bring out some information of clinical value concerning anxiety symptoms, regression of behaviour, or disturbance of the cognitive functions.

In the wording of the questionnaire every effort was made to negative the effect of suggestibility and perseveration and in scoring the forms little evidence of either was found.

(b) *Selection of sample of schools and teachers.*—The questionnaire was issued in July, 1941, to all provided and non-provided elementary schools in six districts of Birmingham, three of these, badly bombed, B1, B2, and B3 ; two comparatively unharmed, S1 and S2 ; and one ‘mixed,’ M, having scattered damage without concentration. Sufficient questionnaires were sent to each school to make sure that all teachers would reply. The figures for schools were based on official returns obtained from the School Attendance Department. Five hundred questionnaires were issued to seventy-nine schools and 379 returns were obtained from a total of sixty-nine schools.

III.—RESULTS.

(a) Results grouped by ages.—

TABLE I.—SHOWING PERCENTAGE OF TEACHERS GIVING REPLIES OF EACH CATEGORY.

	Infants.			Juniors.			Seniors.			Predictive Rankings by Teachers in a Reception Area.
	More.	Less.	Rank- ing.	More.	Less.	Rank- ing.	More.	Less.	Rank- ing.	
	%	%		%	%		%	%		
1.—Fidgety	80	1	4	60	1	6	61	0	5	3
2.—Quarrelsome	34	1	10	16	2	11	14	6	12	10
3.—Losing things	35	3	9	31	3	9	39	7	7	11
4.—Going to lavatory	29	1	12	37	1	8	21	4	10	6
5.—Crying over trifles.....	44	2	8	15	11	12	18	8	11	9
6.—Noisiness	75	0	5	74	3	4	65	5	4	8
7.—Damage to school prop..	30	0	11	23	1	10	31	6	9	12
8.—Interest in 'smut'	5	5	14	1	11	14	7	12	13	13
9.—Dirtyness of person.....	40	11	7	44	5	7	36	5	8	7
10.—Unpunctuality	95	0	1	86	2	1	82	0	1	5
11.—Physical weariness	83	1	3	76	1	3	70	1	3	1
12.—Want of concentration..	88	0	2	81	0	2	81	0	2	2
13.—Lessons forgotten	61	1	6	62	0	5	60	0	6	4
14.—Parents' visits to school..	14	15	13	11	26	13	4	26	14	—

Total number of teachers: Infants, 112; Juniors, 169; Seniors, 97.

The column tabulating replies of category 'same' which was possible on each question has been omitted to save space.

From Table I it can be seen that teachers of the three age levels agree in noting increases in each type of behaviour listed. This percentage varies greatly from question to question. The two significant points are (a) there is no question at which a certain percentage of teachers has not noted an increase, (b) the percentage of teachers making the reply 'more' at any one question is extremely consistent throughout the three types of schools—e.g., items 1, 6, 10, 11, 12 and 13 are all noted to have increased by more than 50 per cent of the teachers at each age level.

From Table I it can be seen that for each item of behaviour a slightly higher percentage of infant teachers note an increase. Possibly infant classes have been more affected by changed conditions. On the other hand, the explanation may be that behaviour may be more individual and observable in school conditions at that stage, and the pressure to conformity less than in juniors and seniors.

From a comparison of the rankings in Table I it can be seen that alike for infants, juniors and seniors, the first six items of behaviour are the same, although in slightly different orders, viz., fidgetiness, noisiness, unpunctuality, physical weariness, want of concentration and lessons not retained. This agreement may indicate that these types of behaviour have increased most, or it may be the result of the subjective factor. Two of the items, want of concentration and lessons not retained, are directly concerned with intellectual attitudes, the behaviour of cognition. The remaining four—noisiness, fidgetiness, unpunctuality, and physical weariness—have a particular relevance to the conditions generally demanded in school as auxiliaries to the learning process, viz., silence, a measure of physical control amounting in some cases to passivity, and continued operation as a group rather than as individuals.

For various reasons, such as the training, attitude and purpose of the teacher, these forms of behaviour may seem to the teachers more prominent than the others. On the other hand, "damage to school property" is ranked low for each age group, which suggests that the teachers' judgments are not unduly influenced by their own reactions to obstructive or aggressive behaviour.

Two of the items ranked among the first six, viz., noisiness and fidgetiness, suggest emotional disturbance. Six further items were incorporated in the questionnaire for their clinical value, viz., losing things, going to lavatory, quarrelsomeness, damage to school property, personal dirtiness, crying about trifles. In all these 25 per cent of infant teachers agreed in noting an increase which suggests fairly marked disturbance in the 5-7 year olds. In the juniors over 25 per cent of teachers note an increase in losing things, going to lavatory and personal dirtiness. For the seniors over 25 per cent note increase in losing things, personal dirtiness and damage to school property.

From this it seems that the junior stage the general behaviour assumed a 'nervous' aspect—increase in fidgetiness, noisiness, losing things and going to lavatory. In the seniors the aggressive aspect is more marked in damage to school property, and the increase in personal dirtiness also suggests anti-social or at least asocial attitudes.

The question was raised as to whether the teachers had been apt to see not what was actually before them, but what they expected to see. To test this, after the results had been tabulated, an abbreviated form of the questionnaire was sent in the summer of 1942 to a reception area in North Wales. This contained the forms of behaviour dealt with in the questionnaire arranged in random order as a list. Teachers in this reception area were asked to rank them in the order in which they would expect an increase if any after heavy raids. Column 10 of Table I gives these 'predictive rankings.' The sample of teachers was unfortunately small, twenty in all. There is a marked similarity between the predictive rankings and the post-raid rankings—the first five items in both groups being the same. Noisiness and damage to school property are ranked lower in predictive rankings than in post-raid; going to lavatory much higher. There is a marked general similarity in the rankings predictive and post-raid, sufficient to suggest that the teachers' own interests have influenced their findings; but there is enough disparity to suggest that post-raid rankings had a basis in objective experience and observation.

The space in the questionnaire for further observations was used by about 25 per cent of the questionees. Many of these comments suggested that the changes in behaviour observed since the heavy raids were rather the result of war conditions affecting the child's domestic routine, and although related in time to the raids, were not connected with them causally. The other comment which emerged with any frequency was that the behaviour of boys and girls was distinct—boys reacting by increased aggression and girls by increased nervousness.

(b) *Comparison of results by districts.*—The questionnaire was sent to all the schools of six districts of the City of Birmingham as obtained from the returns of the School Attendance Department. The districts were chosen in such a way that three had suffered severe bombing, two had been comparatively unharmed, and one had suffered scattered damage.

TABLE II.—PERCENTAGE OF TEACHERS NOTING AN INCREASE.

	<i>Bombed Areas.</i>	<i>Safe.</i>	<i>Mixed.</i>
1.—Fidgetiness	65	68	64
2.—Quarrelsomeness	15	25	18
3.—Losing things	38	35	28
4.—Going to lavatory	28	28	34
5.—Crying about trifles	23	28	8
6.—Noisiness	58	72	65
7.—Damage to school property	28	36	17
8.—Interest in 'smut'	5	6	0
9.—Personal dirtiness	35	50	11
10.—Unpunctuality	88	91	77
11.—Physical weariness	75	86	62
12.—Want of concentration	87	78	80
13.—Lessons not retained	80	57	47
14.—Parents' visits to school	11	8	13
Total number of teachers replying ..	100	171	78

Consideration of the above table indicates that at every item save want of concentration, lessons forgotten and losing things, a higher percentage of teachers in the safe areas note an increase in the behaviour. The discrepancy between the teachers' findings in the two types of district is most noticeable with regard to noisiness, quarrelsomeness, personal dirtiness, physical weariness, and lessons not retained.

Before attempting to draw any general conclusion from such results it has to be recalled that the 'safe' areas, although relatively unharmed as far as damage to property or loss of life was concerned, were within the boundaries of the city itself and at a distance of from 5-6 miles from city centre. Their safety is the brittle result of events and not a necessity inherent in themselves. The noise of the great raids could be fully heard in those areas. And in the days after the raids, the tide of rumour carried from city centre, crept around the homes of the children in the 'safe' areas. There was a considerable migration after each raid of bombed-out families from B areas to relatives in S areas. This produced difficult living conditions physically through overcrowding, interruption of routine, etc., and difficult conditions psychologically. Anyone who has had contact with bombed-out persons will agree that those who make a normal reaction immediately after the event generally have a great need to talk of the events. This talk must stimulate anxiety having to some extent a phantasy character to those who have not experienced the full impact of the physical trauma. The children of the S areas were in some respects like the wedding guest when the ancient mariner had finished with him!

The disturbing effect of phantasy anxiety arising from an experience imminent both in time and place has been remarked by Dr. Aubrey Lewis in a report in which he quotes a doctor in Rhyl who found a number of anxiety states in people "who have not been bombed at all." This symptom seems relevant to the figures in Table II.

Statistically, the differences between the percentages for S and B areas are only significant to questions 9 and 13, i.e., in relation to retention of lessons which seems poorer in B areas and personal dirtiness which seems greater in S areas. The former was to be expected. In the latter no ready explanation can be put forward. It is probably the result of many of the factors mentioned in the preceding paragraph. Personal dirtiness in its deliberate form of refusal to wash, attend to hair and clothes, etc., when regarded as a clinical symptom, appears more often in adolescents of both sexes than in any other age group. There is generally part of a general protest against adult authority, an inverted manner of asserting the individual's right to standards of his own. In the larger group of children covered by the investigation this form of behaviour may have some relation to a rejection and mistrust of group authority and have affinities with certain forms of juvenile delinquency. But that, of course, is insufficiently borne out by the evidence at hand.

IV.—CONCLUSIONS.

(a) Teachers report that the behaviour of children in the school situation seems different since the raids. This difference is not seen in specific new forms of behaviour but in more difficulty in conforming to the usual standards. (Question 17 in the form left scope for the mention of any behaviour not listed—practically none was given.)

(b) The most striking differences were observed in those forms of behaviour involving cognitive attitudes, e.g., there is less concentration and retention of knowledge.

(c) More teachers note increases in the forms of behaviour which seem, from the clinical standpoint, to involve activity and violence, rather than in those which seem to involve shrinking and withdrawal.

(d) There was a certain degree of similarity in the reactions of all age groups in the elementary school. The reactions of children in the infant schools were more noticeable than those of juniors and seniors. Among juniors there seemed a slight increase of nervous behaviour and among seniors an increase of aggressive behaviour.

(e) The reactions seem just as noticeable in the undamaged areas of the city as in those that have been badly bombed, although in the case of two items the difference was statistically significant, viz., more frequent personal dirtiness in the safe areas, and more frequent non-retention of lessons in the bombed areas.

(f) The changes in behaviour are probably due not to the raids themselves but to the concomitant factors, e.g., lack of sleep, disturbance of habit routine, irritability of adults, absence of one or both parents from home, and, finally, the psychological contagion of group unsettlement.

(g) These findings are based on an analysis of the replies of 379 Birmingham teachers which probably represents a school population of about 10,000 children between the ages of 5-14. As the teachers' opinion has been the numerical unit in this investigation, the actual number of individual children in whom an increase of a certain form of behaviour was observed may be small, in relation to the total 10,000 pupils in the classes.

(h) As teachers' returns might be thought to be affected by what they expected to find, the list of behaviour items was submitted to twenty teachers in an unraided area of North Wales. The majority agreed in *expecting* an increase in each of the listed forms of behaviour but differed in some instances from the Birmingham teachers as to which forms they would expect to increase most.

The writer wishes to thank the teachers of the City of Birmingham who made this investigation possible; the students of Professor Valentine, who helped with the scoring; Dr. Innes and the City of Birmingham Education Committee for permission to publish the results.

The conclusions contained in this investigation are not necessarily endorsed by the Birmingham Local Education Authority.

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AN EXPERIMENTAL INVESTIGATION INTO THE EFFECTS OF PHYSICAL TRAINING ON PERSONALITY.*

By F. J. MILVERTON

(Department of Education, University of Leeds).

I.—*The need for an investigation into the effects of physical training on mental condition.*

II.—*Description of the experiment.*

III.—*Results and conclusions: (a) The effect on I.Q. (b) The effect on some personality traits. (c) Summarised conclusions.*

Appendix: Questionnaire and Tables.

I.—THE NEED FOR AN INVESTIGATION INTO THE EFFECTS OF PHYSICAL TRAINING ON MENTAL CONDITION.

THE effects of physical training on mental condition or, conversely, the effects of mental condition on physical training, are topics to which psychologists have as yet given but little attention.

In 1935 an experiment was carried out at the City School, Lincoln,¹ which was designed to test the effect of a daily lesson in physical exercises on (1) the physical development of a boy; (2) the possible stimulating effects on the mind; (3) the progress made in certain subjects on which less time had been spent than is normally the case owing to the extra physical training.

An analysis of the evidence of this Lincoln experiment shows, however, using the usual criterion of significance,² that little can be concluded from that experiment as to the effects of physical training on the minds of the pupils.

The present paper gives a brief account of an attempt made by the author in 1939 to investigate the effects of physical training on the personality of the pupil.

II.—DESCRIPTION OF THE EXPERIMENT.

The experiment was conducted over the full period of twelve weeks of the spring term extending from January to March, 1939.

The school was a residential public school for boys, the proportion of resident boys being greater than day boys.

The subjects of the experiment were forty resident boys, of approximately equal chronological age, the average age of the forty boys being 14 years 7 months, and they were chosen from the A and B sections of a class in the middle school, those who were non-resident being omitted.

For the purpose of the experiment they were divided into two groups of twenty each.

It is recognised that the ideal division would have been that of two groups of exactly equal mental age, but in view of the fact that the boys normally worked respectively in the A or B stream of the same class, and as there was no intention of directly comparing individual results in the A group with individual results in the B group, it was decided to divide the groups according to the A and B classification of the school.

All the boys were submitted to an intelligence test at the beginning and the end of the experimental period—i.e., the spring term, 1939.

The test at the beginning of the term was Cattell's Intelligence Test, Scale 2, Form A, and at the end of the term Cattell's Intelligence Test, Scale 2, Form B. As the norms supplied with these tests are intended for general use it was not surprising to find them too low for the pupils from this particular school. The use of shorter time limits would improve the value of the tests with such pupils. There was, however, no reason to doubt the efficacy of the tests for the purpose in view, namely, to ascertain whether exercises in physical training had any effect on I.Q.

* A short synopsis of a thesis approved for the degree of M.Ed. at the University of Leeds, 1940. It has been unavoidably delayed owing to the author's military duties.

¹ A. SUTCLIFFE and J. W. CANHAM: *Experiments in Homework and Physical Education*.

² $\frac{d}{\sigma} > 3$ i.e., the difference d between the averages for the experimental and control groups respectively should be larger than three times its standard deviation σ .

During the first week of the experiment three masters in the school were asked to assess the personality traits of the forty boys by means of a rating scale, the details of which are described below.

The qualifications and teaching experience of the three raters were as follows:

Rater X.—Graduate in arts with twenty years' experience of teaching history and modern languages. For the last fifteen years has been a resident master in the school.

Rater Y.—Graduate in arts with ten years' experience of teaching English language and literature in the school. Part of this period was as a resident master.

Rater Z.—Graduate in science with two years' resident experience of teaching physics in the school.

It was made clear to the three raters that the assessment was not to be made with any reference to the attitude of the pupil in any special work done by the pupil for the rater, but rather with reference to the whole general attitude of the pupil in his domestic and scholastic life at the school.

From the first to the last week of the spring term the A stream of twenty boys was subjected for two periods of three-quarters of an hour each week to a physical training lesson consisting of the same sequence of exercises at each lesson. In contrast the B stream was given a progressive course of physical training of two periods a week, each period being employed on a sequence of exercises involving new material or an extension of exercises previously learnt.

Finally, in the last week of the spring term the three raters were again asked to assess the same personality traits of the forty boys by means of the rating scale, no reference to the first rating being permitted.

The rating scale consisted of sixteen questions, each being concerned with a different personality trait, the inclusion of each trait having been determined by its existence in the literature of physical training. Writers on physical training, physical education or physical fitness have singled out these traits as being traits affected by a proper scheme of physical training.

The traits used were selected because they appear in one or more of the following references, and no trait was included unless at least one of the following authorities insisted that it was affected by a proper scheme of physical training.

BOARD OF EDUCATION: *Syllabus of Physical Training for Schools.*

BOARD OF EDUCATION: *Reference Book of Gymnastic Training for Boys.*

F. J. C. MARSHALL and W. R. REES: *Physical Education in Boys' Schools.*

F. W. W. GRIFFIN: *The Scientific Basis of Physical Education.*

D. BURNS: *The Assessment of Physical Fitness.* (Report of the British Association, 1939-40.)

The sixteen personality traits chosen were: Gregariousness, sociability, loyalty, competitiveness, co-operation, independence, enthusiasm, cheerfulness, concentration, alertness, control, decision, initiative, fearlessness, self-respect, and self-confidence.

Each question was followed by a graphic rating scale consisting of a straight line beneath which descriptive adjectives or phrases were written. The questionnaire is reproduced in the appendix to this paper, but an example is given here in order that its nature shall be clear.

Is he fond of the company of his school-fellows or does he go around on his own?

Always with others.	Rather tends to seek com- pany.	Average.	Rather tends to be alone.	Always alone.
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The raters were required to answer the question by placing a cross at any position on the line from which a numerical value was obtained by a simple process of evaluation.¹

¹ A scoring ruler as shown below was placed along the line translating into numbers the descriptive adjectives beneath the rating scale. The use of seven divisions is in accordance with Symonds. (P.M. SYMONDS: *Diagnosing Personality and Conduct.*)

+3	+2	+1	0	-1	-2	-3
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This type of questionnaire and the method of evaluating the results were also used by Lamb two years later for the traits used by him and already described in this *Journal*.²

III.—RESULTS AND CONCLUSIONS.

(a) *The effect on I.Q.*—It appears that there was no significant improvement in I.Q. as a result of the progressive course of physical exercises, nor was there any significant change in the I.Q. of those who had the same sequence of exercises at each lesson.

This conclusion is obtained from the figures of Tables 1 and 2 in the Appendix, and is made on the assumption that the two Cattell Tests are equally difficult, and that they would yield the same norms whichever was given to a group.

(b) *The effect on some personality traits.*—From what has been said above, it will be seen that in each rating a numerical value was obtained for each trait in the case of every pupil. Using these numerical values it was possible to determine for each trait the degree of agreement in the ratings of the teachers X and Y, of X and Z, and of Y and Z.

It is clear that unless the degree of agreement between the assessments of the raters for a particular trait is sufficiently high there would be little use in retaining that trait for further study. The procedure then was to find the degree of agreement between every two raters for each of the traits. The degree of agreement between two raters is expressed as a coefficient of correlation in Tables 3 and 4. Unless this coefficient reached an average of .3 for a particular trait² it was not considered expedient to regard the assessment of that trait as satisfactory.

Of the sixteen personality traits included in the questionnaire, in the first rating the raters were able to measure satisfactorily eight of them, namely, gregariousness, sociability, loyalty, co-operation, enthusiasm, concentration, initiative and fearlessness. The raters were unable to agree about the remaining eight traits. In the case of self-respect, the average value is greater than .3; nevertheless, as two of the three coefficients are below this value it was considered unsatisfactory.

In the second rating the raters measured satisfactorily the following eight traits: gregariousness, sociability, co-operation, independence, concentration, control, initiative, and self-confidence. Again there was no agreement between the raters about eight of the traits. Enthusiasm and fearlessness were considered suspect for the same reasons as was self-respect in the first rating. These results are made clearer when set out as in Table A below.

TABLE A

<i>Trait.</i>	<i>Unsatisfactory in First Rating.</i>	<i>Unsatisfactory in Second Rating.</i>
(1) Gregariousness	—	—
(2) Sociability	—	—
(3) Loyalty	—	X
(4) Competitiveness	X	X
(5) Co-operation	—	—
(6) Independence	X	—
(7) Enthusiasm	—	X
(8) Cheerfulness	X	X
(9) Concentration	—	—
(10) Alertness	X	X
(11) Control	X	—
(12) Decision	X	X
(13) Initiative	—	—
(14) Fearlessness	—	X
(15) Self-respect	X	X
(16) Self-confidence	X	—

² HECTOR LAMB: "An Enquiry into (1) The Relative Popularity of Technical and Expressional Methods of Handwork Teaching, and (2) Their Effect on Character Development."—This *Journal*, XII, Parts 1 and 2, 1942.

An inspection of this Table A shows that only five of the original sixteen traits can be considered as satisfactory traits to be rated and used as evidence for the final inferences of the experiment. These are gregariousness, sociability, co-operation, concentration, and initiative.

In the first place it was necessary to examine the inter-relationships existing between these five traits. The resulting correlations are exhibited in Tables 5 and 6. It would seem that gregariousness, sociability, and co-operation have much in common, whilst concentration only shows an appreciable relation to co-operation. It will be also noted that there is a striking difference in the values in the initiative column between the first and second ratings. Table 8 shows that the reliability of the rating for initiative is much lower than that of any of the other four traits. How far this is due to the effect of the two courses on this trait, or to a change of view on the part of the raters as to the meaning of initiative, it is not possible to conclude.

A further investigation into the nature of these traits is that of determining the relationship between the first rating of the five traits and the intelligence quotients obtained in the Cattell Test, Form A. No account was taken of the correlation between the second rating of the traits and these intelligence quotients obtained in the first intelligence test, as in the interval between the first and second rating, half of the subjects had been following a different course of physical training from that taken by the other half.

Table 7 in the Appendix reveals that a negative relationship exists between four of the traits and I.Q., and, as might be expected, a significant positive correlation between concentration and I.Q.

Finally, an examination of the differences between the first and second ratings on each of the personality traits enabled us to draw some further conclusions. The initial observation to be made from Table 9 is that the "Difference Column" of the B stream or progressive group, shows three gains and two losses in contrast to the four losses and one gain of the A stream or non-progressive group. Furthermore, the one gain of the non-progressive group also appears as a gain in the column of the progressive group. It is, however, necessary before any conclusions are drawn about these losses and gains to determine whether the figures which represent them are significant or not. This has been done in the last column of Table 9. It is seen that as far as the A stream is concerned it is impossible to conclude from this experiment whether there was a loss in gregariousness, co-operation, concentration, and initiative, although the figures point to this being the case with respect to gregariousness.

Turning in contrast to the evidence of the B stream, we are able to conclude here that a gain in concentration resulted from the progressive course. Equally certain appears the loss in initiative, but it should be noted that the reliability of the rating for this trait was low in contrast to the other traits and the conclusion cannot therefore be made with any confidence (see Table 8).

(c) *Summarised conclusions.*—The reader is reminded that the experiment was designed to test the statements made by a variety of authorities as to the effects of physical training in the mental sphere. Before summing up the results of the experiment and pointing out their implications from an educational standpoint it is necessary to emphasise that the results are only regarded as tentative as they are based on a single experiment made at one school. The group of boys may not have been a representative sample of the secondary school boy. The conditions under which the experiment was made may not be representative of the average school. Such considerations shows that great caution must be used in drawing the following conclusions:

- (a) A progressive course of physical training resulted in an increase only of concentration in those taking part; such an increase being evident outside of the physical training lesson. This is understandable in that physical training and interesting physical exercises should have a beneficial effect on general health which in turn would be expected to influence a mental process of the nature of concentration.

The Effects of Physical Training on Personality

There was no significant evidence of an effect on gregariousness, sociability, co-operation, or initiative.

- (b) That a non-progressive course of physical training consisting of the mechanical repetition of exercises made no difference outside of the physical training lesson to the personality of those taking part, as far as the traits measured are concerned. This does not imply that a non-progressive course has no adverse effects outside the lesson; it undoubtedly had a bad effect on the discipline of the lesson itself.

It follows then that the bulk of the claims made for the effects of physical training in the mental sphere cannot be substantiated by scientific evidence, either because they are not true or because they refer to qualities which cannot be measured satisfactorily, or because they require a longer time for testing than was possible in this experiment.

It remains for others to test further these conclusions and see whether the claims made by the authorities on physical training in favour of an extensive transfer are substantiated, or whether there is only limited evidence as found in this experiment.

APPENDIX

QUESTIONNAIRE

- (a) Let these ratings represent your own judgment. Do not confer with anyone in making them.
- (b) In each trait in the questions below, compare the pupil with the average pupil of the same age.
- (c) In rating for any particular trait, disregard every other trait except that one. Many ratings are rendered valueless because the rater allows himself to be influenced by a generally favourable or unfavourable impression which he has formed of the person rated. Do not rate a person high on all traits because he is exceptional in some.
- (d) Place a cross somewhere on the line which runs from "very high" to "very low" to indicate the standing of the child in each quality. You may place the cross at any point on the line, it not being necessary to locate it above any descriptive phrase.
- (e) Do not study too long over any one child. Give for each the best judgment you can and go on to the next.
- (f) Give a rating for every trait.
- (g) The ratings will be held strictly confidential.

- (1) Is he fond of the company of his school-fellows or does he go around on his own?

Always with others.	Rather tends to seek com- pany.	Average.	Rather tends to be alone.	Always alone.
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- (2) Is he ready and willing to converse with his school-fellows about topics of the moment or does he keep his opinions to himself?

Always talking with others.	Rather tends to talk with others.	Average.	Rather tends to keep opinions silent.	Always keeps opinions to himself.
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- (3) Is he faithful to any duty or obligation to which he is set or does he follow his own desires rather than duties imposed upon him by the school as a society?

Always faithful to his obliga- tions.	Rather tends to be faithful.	Average.	Rather tends to follow own desires.	Always head- strong to his own desires.
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- (4) Is he keen on the spirit of competition or is he a bad loser?

Always keen on the spirit of competition.	Rather tends to be keen on it.	Average.	Rather tends to lose badly.	Always loses badly.
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- (5) Is he keen on "throwing his weight" into communal activities or is he indifferent to working with his friends over some project?

Always pulls his weight with his friends.	Rather tends to work with his friends.	Average.	Rather tends to show no co-operation.	Never shows co-operation.
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- (6) Does he rely on his friends over every problem with which he is faced or does he fight his own way through his problems of school life?

Always relies on his friends.	Rather tends to rely on friends.	Average.	Rather tends to be independent.	Always independent.
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- (7) Is he enthusiastic beyond the average schoolboy's interest over any new school project or does he show a lack of enthusiasm for all new features?

Always enthusiastic.	Rather tends to be enthusiastic.	Average.	Rather tends to show lack of enthusiasm.	Always shows lack of enthusiasm.
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- (8) Is he willing to get the best out of life whatever his circumstances or is he discontented with things as he finds them?

Always cheerful.	Rather tends to be cheerful.	Average.	Rather tends to be discontented.	Always discontented.
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- (9) Is he able to employ all his powers of attention upon the project of the moment or is his concentration weak?

Always concentrates.	Rather tends to concentrate.	Average.	Rather tends not to concentrate.	Never concentrates.
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- (10) Is he immediately aware of a new situation when it arises or does the activity of the moment so absorb his attention that he is not immediately aware of any change of situation?

Immediately aware.	Tends to be immediately aware.	Average.	Tends not to be alert.	Never alert.
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- (11) Has he full control of his emotions or does he lack restraint?

Always holds himself in check.	Tends to hold himself in check.	Average.	Tends to lack restraint.	Completely lacks restraint.
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- (12) Is he able to make a formal or rapid judgment on a subject or circumstances or does he show a weakness in making decisions?

Decides immediately.	Tends to decide immediately.	Average.	Tends to fail to make decisions.	Never makes decisions.
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- (13) Is he a leader or does he depend on his friends for an example before acting himself?

Always leads.	Rather tends to lead.	Average.	Tends to rely on others.	Always relies on others.
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- (14) Has he the "spirit of risk" which allows him to enter into an activity whatever the result, or has he cowardly tendencies?

Always takes any risk.	Rather tends to take risks.	Average.	Rather tends to be a coward.	A coward.
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- (15) Does he show by his everyday actions that he realises the worth of his own personality or does he lack self-respect?

Absolutely no self-respect. Tends to have no self-respect. Average. Tends to be self-respecting. Completely self-respecting.

- (16) Have his actions that boldness which indicates his own trust in his own efforts or do they indicate a fear that he will be unsuccessful?

Absolutely self-confident. Tends to be self-confident. Average. Tends to have no confidence in himself. Has no confidence in himself.

TABLE 1

<i>Form A of Cattell's Test.</i>				<i>Form B of Cattell's Test.</i>			
<i>A Stream.</i>		<i>B Stream.</i>		<i>A Stream.</i>		<i>B Stream.</i>	
<i>Mean I.Q.</i>	<i>Av. Dev.</i>	<i>Mean I.Q.</i>	<i>Av. Dev.</i>	<i>Mean I.Q.</i>	<i>Av. Dev.</i>	<i>Mean I.Q.</i>	<i>Av. Dev.</i>
139	14.15	115	15.45	142	14.75	117	15.40

TABLE 2

<i>A Stream.</i>			<i>B Stream.</i>		
<i>Observed Difference.</i>	<i>AD of Difference.</i>	<i>Ob. Diff. AD Difference.</i>	<i>Observed Difference.</i>	<i>AD of Difference.</i>	<i>Ob. Diff. AD Difference.</i>
3	1.29	2.32	2	1.62	1.24

From the figures of Tables 1 and 2 we see that the observed difference of 3 for the A stream is insignificant as is also the observed difference of 2 for the B stream.

Tables 3 and 4 summarise the correlation coefficients of the three raters X, Y and Z on the first and second rating.¹ The average value given in the last column has no real significance, and was only used as an approximate means of determining the validity of the ratings of any individual trait. For this purpose a minimum average value of .3 was employed.

TABLE 3
FIRST RATING

	<i>R xy.</i>	<i>R xz.</i>	<i>R yz.</i>	<i>Average.</i>
Gregariousness .....	.476	.535	.376	.462
Sociability .....	.310	.537	.428	.425
Loyalty .....	.437	.476	.523	.479
Competitiveness .....	.158	.339	.140	.212
Co-operation .....	.680	.422	.567	.556
Independence .....	.241	.210	.235	.229
Enthusiasm .....	.315	.599	.500	.471
Cheerfulness .....	.127	—	.465	—
Concentration .....	.647	.570	.421	.546
Alertness .....	.373	—	.324	—
Control	—	.221	.371	—
Decision .....	.235	.194	.297	.242
Initiative .....	.275	.400	.328	.334
Fearlessness .....	.518	.303	.228	.350
Self-respect .....	.401	.285	.267	.318
Self-confidence .....	.327	.183	.252	.254

¹ The blanks in Tables 3 and 4 yielded insignificant correlations. Their exact values cannot now be inserted as the data were destroyed by enemy action.

TABLE 4
SECOND RATING

	<i>R xy.</i>	<i>R xz.</i>	<i>R yz.</i>	<i>Average.</i>
Gregariousness .....	.425	.236	.342	.334
Sociability .....	.293	.588	.117	.333
Loyalty	—	.581	.243	—
Competiveness	—	.333	.440	—
Co-operation .....	.201	.532	.332	.355
Independence .....	.401	.393	.510	.435
Enthusiasm .....	.197	.436	.280	.304
Cheerfulness .....	.132	.126	.203	.154
Concentration .....	.341	.574	.500	.472
Alertness .....	.181	.315	.280	.259
Control .....	.162	.426	.443	.344
Decision .....	.191	.382	.325	.299
Initiative .....	.520	.192	.402	.371
Fearlessness .....	.225	.592	.228	.348
Self-respect .....	.593	—	.280	—
Self-confidence .....	.555	.136	.354	.348

The five traits were correlated each with the other, and the correlation coefficients in the first and second rating are given in Tables 5 and 6 below.

TABLE 5
FIRST RATING

	<i>Greg.</i>	<i>Sociab.</i>	<i>Co-oper.</i>	<i>Concen.</i>	<i>Init.</i>
Gregariousness	—	.815	.688	-.063	.566
Sociability .....	.815	—	.633	-.130	.748
Co-operation .....	.688	.633	—	.403	.575
Concentration	-.063	-.130	.403	—	.175
Initiative .....	.566	.748	.575	.175	—

TABLE 6
SECOND RATING

	<i>Greg.</i>	<i>Sociab.</i>	<i>Co-oper.</i>	<i>Concen.</i>	<i>Init.</i>
Gregariousness	—	.759	.403	-.146	.092
Sociability .....	.759	—	.408	-.153	.248
Co-operation .....	.403	.408	—	.543	.166
Concentration	-.146	-.153	.543	—	.310
Initiative .....	.092	.248	.166	.310	—

TABLE 7

	<i>Greg.</i>	<i>Sociab.</i>	<i>Co-oper.</i>	<i>Concen.</i>	<i>Init.</i>
Correlations with I.Q. as given by Cattell's Test, Form A	-.318 ± .09	-.330 ± .09	-.226 ± .10	.318 ± .09	-.386 ± .09

The correlations between the first and second ratings are given in Table 8 below.

TABLE 8

<i>A Stream.</i>					
	<i>Greg.</i>	<i>Sociab.</i>	<i>Co-oper.</i>	<i>Concen.</i>	<i>Init.</i>
Correlation Coefficients between First and Second Rating.....	.807 ± .05	.895 ± .02	.794 ± .05	.913 ± .02	.436 ± .12
<i>B Stream.</i>					
Correlation Coefficients between First and Second Rating.....	.799 ± .05	.785 ± .05	.829 ± .04	.806 ± .05	.426 ± .12

Deviations from the means on each rating of the five traits were then calculated, and from these the average deviation values for each trait in each rating were obtained.

Using these average deviation values and noting the difference between the means of the totals of the first and second rating for each trait it is possible by means of the usual formula¹ to show whether these differences are significant or not (see Table 9).

TABLE 9

<i>A Stream.</i>						
	<i>Mean of Total of First Rating.</i>	<i>Mean of Total of Second Rating.</i>	<i>Difference.</i>		<i>AD of Difference.</i>	<i>Difference. AD of Difference.</i>
			<i>Loss.</i>	<i>Gain.</i>		
Gregariousness	1.80	1.00	0.80		.36	2.2
Sociability	0.85	1.45		0.60	.35	1.7
Co-operation	1.10	0.65	0.45		.28	1.6
Concentration	1.15	0.85	0.30		.23	1.3
Initiative	0.00	-0.25	0.25		.41	0.6
<i>B Stream.</i>						
Gregariousness	1.05	0.95	0.10		.29	0.3
Sociability	0.35	0.90		0.55	.26	2.1
Co-operation	0.00	0.15		0.15	.24	0.6
Concentration	-1.55	-0.65		0.90	.27	3.3
Initiative	0.30	-0.90	1.20		.36	3.3

An inspection of Table 9 forces the conclusion that only in the case of concentration and initiative in the B stream are the figures significant. Gregariousness in the A stream and sociability in the B stream are trending towards significance.

$$^1 \text{AD}_{\text{Diff}} = \frac{\text{AD}_1^2}{N} + \frac{\text{AD}_2^2}{N} - \frac{2r \text{AD}_1 \cdot \text{AD}_2}{N}$$

I wish to acknowledge my debt to Dr. Ll. Wynn Jones for his help and guidance.

THE INTERESTS OF SENIOR SCHOOL CHILDREN IN NON-SCIENTIFIC SUBJECTS.

By R. RALLISON.

I.—*Introduction.* II.—*Distribution of interest among non-scientific subjects.* III.—*Influences on the interest of children in non-scientific subjects.* IV.—*Non-scientific topics in which seniors display interest.* V.—*Summary.*

I.—INTRODUCTION.

THE Board of Education's *Handbook of Suggestions*¹ says: "... the questions that arise spontaneously in their (the children's) minds ... should be the starting point for the teaching. ..." To enable the teacher to have information on the kinds of questions that are actually of interest to children, so that this suggestion can be more readily applied, this investigation took place. It supplements an earlier one into the "Scientific Interests of Senior Children."² As a by-product there was an accumulation of data which on analysis revealed something as to the nature and content of senior children's interests in fields other than the scientific. The term 'non-scientific' cannot strictly be applied to these interests and is only used in the present investigation as a convenient label for interests related to subjects of the curriculum other than science. This dichotomy then does not rest on any fundamental basis. Thus many geographical questions which are obviously scientific are included in the present paper.

Other investigators have covered aspects and sections of this field of interests: thus H. R. V. Ball³ has supplied results for juniors; J. J. Shakespeare⁴ has reported on the order of popularity of school subjects for elementary school children; while R. A. Pritchard⁵ has done likewise for secondary school children. A. J. Jenkinson⁶ has made an extensive study of what children like most to read.

To obtain the raw material for these investigations the following instructions were cyclostyled, and with a covering note sent by post to 141 schools in the City of Newcastle-upon-Tyne and the Urban and Rural Districts of the County of Northumberland.

PROCEDURE.

1.—Give each child (above nine years old) a large clean sheet of paper. Say that more will be supplied if needed.

2.—Repeat the following: (a) If you are a boy write *boy* at the top of your paper; (b) If you are a girl write *girl* at the top of your paper; (c) Write alongside this your age in years and months.

3.—Read this slowly *twice*: You are coming to school to learn all kinds of things. I am not certain you are being taught the things you want to know. I want to find out all the things boys and girls really want to know. So write down, whenever you have any spare time, either in school or at home, *all* the things you would like to know. You can write down *anything* and *everything*. Write each thing you would like to know on a new line. You have a whole week in which to write these things on paper; try to write some every day. Remember: it is not fair to ask anyone else about this. I only want to find out what *you* would like to know.

The sheets completed by children were read. All questions, remarks, etc., recorded by a total of 3,514 children in the senior age-range were divided into two groups: (1) concerned with science, (2) not concerned with science and here labelled non-scientific.

Altogether, 4,931 boys' questions and 12,333 girls' questions found a place in the non-scientific group. The disparity in these numbers is due to the fact, pointed out in the previous investigation, that boys more than girls tend to concentrate their interests in

¹ *Handbook of Suggestions*.—H.M. Stationery Office, 1937, p. 486.

² This *Journal*, Vol. IX, Part II, 1939.

³ *School Science Review*, No. 68, p. 571, "Miscellaneous Questions."

⁴ This *Journal*, Vol. VI, 1936, p. 151.

⁵ *Ibid.*, Vol. V, pp. 157 and 229.

⁶ *What do Boys and Girls Read?*—Methuen, 1940.

the scientific field. Finally, the non-scientific questions were classified into subjects based as far as possible on the usual curriculum and the children classified as in Table A.

TABLE A.—NUMBERS OF CHILDREN.

Age Group.	City.		Urban.		Rural.		Total.
	Boys.	Girls.	Boys.	Girls.	Boys.	Girls.	
11+	328	328	60	92	122	137	1067
12+	297	265	180	190	128	146	1206
13+	262	208	147	248	135	241	1241
TOTAL ..	887	801	387	530	385	524	3514

II.—DISTRIBUTION OF INTEREST AMONG NON-SCIENTIFIC SUBJECTS.

All questions, remarks, etc., concerning games and drill were counted and allocated to a group of interests labelled games and physical training. Then the percentage that this number of questions on games and physical training were of the total number of questions on non-scientific subjects was calculated, and the resulting percentage taken as indicative of the relative amount of interest boys or girls have in games and physical training. Similarly, all questions referring to kinds of jobs and occupations were counted and taken as indicating an interest in vocations, and, as for games and physical training, a percentage found for purposes of comparison. In this way percentages were found to represent the relative interest in various school subjects other than the sciences. Table B shows the results obtained in this way.

TABLE B.—DISTRIBUTION OF INTEREST AMONG NON-SCIENTIFIC SUBJECTS.

Subjects.	Percentage of ALL Questions.		Differences.	S.E. of Differences. ¹	Critical Ratio. ²
	Boys.	Girls.			
1.—Vocations	24.6	14.8	9.8	1.34	7
2.—Geography	15.6	6.7	8.9	1.06	8
3.—History	11.6	3.7	7.9	0.9	8
4.—Games and Physical Training ..	11.1	20.3	9.2	1.2	7
5.—General Knowledge	7.0	1.7	5.3	1.1	5
6.—Crafts	5.2	3.6	1.6	0.7	2
7.—Recreation	4.0	8.3	4.3	0.8	5
8.—English	3.5	7.4	3.9	0.8	5
9.—Mathematics	3.4	2.9	0.5	0.6	0.8
10.—Economics	3.0	0.2	2.8	0.5	5
11.—Art	2.6	3.3	0.7	0.6	1.1
12.—Religion	2.5	1.4	1.1	0.9	1.2
13.—Languages	2.3	6.8	4.5	0.7	6
14.—Music	1.6	3.3	1.7	1.0	1.7
15.—Domestic Activity	0	9.3	9.3	0.7	13
16.—Needlework	0	6.2	6.2	0.6	10
17.—Adornment	0	0.3	—	—	—

Correlation coefficient³ 0.51

P.E.⁴ of correlation coefficient 0.13

S.E. = Standard Error.

P.E. = Probable Error.

Correlations were calculated from the product-moment formula as fully explained by Vernon.⁵

¹ Calculated as in Vernon's *Measurement of Abilities*, p. 99, from $S.E. = \sqrt{\frac{P_1 Q_1}{N_1} + \frac{P_2 Q_2}{N_2}}$

² See VERNON: *Measurement of Abilities*, p. 95.

³ See *Measurement of Abilities*, pp. 108-111.

⁴ Calculated from $P.E. = \frac{0.6475(1-r^2)}{\sqrt{N}}$

Inferences made from these results are :

- (1) From the size of the correlation coefficients, boys and girls show moderate correspondence in the extent to which they are interested in the same subjects.
- (2) Both sexes display outstanding interest in vocations, games and physical training.
- (3) Both sexes are slightly interested in crafts, mathematics, art, religion and music.
- (4) Girls only show interest in domestic activity and needlework.
- (5) Girls are not interested in history and geography to the extent of boys, but they are more often interested than boys in English.

The first inference is in line with results obtained for American children.¹ Based upon the differing interests found for boys and girls, the U.S. Office of Education advocates separate reading books for boys and girls.

The second inference as to vocations, games and physical training, agrees with an observation by J. J. Shakespeare.² "Generally, subjects which permit bodily activity on the part of the pupil are more popular. . . . Later, the development of interests extraneous to school bring an utilitarian idea which influences popularity." The subject specified above as vocations contained all the questions asked by children about the numerous common jobs and livelihoods. They obviously bore the imprint of "interest extraneous to school," and were doubtlessly fostered by the 'utilitarian' idea of how to seek employment on leaving school. There seems to be the same need in the senior school as in the secondary school for some type of special attention to vocational guidance so that this outstanding interest of the scholars can be met and educated. Some secondary schools have, of course, realised this, and their careers' masters tackle the problem ; something on similar lines should surely be done in the senior schools.

The interest revealed in all forms of games and physical activity by both boys and girls might be expected, especially in the case of boys. Jenkinson's³ analysis of newspaper reading points in a similar way, since he found "Interest in sport is large . . . a natural interest of four out of five boys." American investigators "have pointed out from surveys of leisure-time activities that . . . there is among girls a desire for more physical activity in place of sedentary occupations."

As to the fourth inference, Jenkinson⁴ found stories of home life form a most important part of the reading of girls and that at 13+ increased attention is paid to women's magazines . . . due to puberty directing interest more strongly to the home.

In connection with the fifth inference, Ball⁵ indicates that geography and history are subjects in which junior children show a special interest. For seniors, Jonkinson⁶ found a " . . . fairly constant interest in history stories. Note should be taken of the fact that the actual content of the questions asked and classified as history differs from the more formal interpretation of history to school children and is in line with the ideas of those who desire a topical approach. This should become evident by reference to Part IV, where the content of the interests are indicated. As Ball⁷ remarks : "It is interesting to speculate what a syllabus of history . . . based on children's questions, would be like. Its heroes would be the latest flying stunts . . . few of the familiar figures of history would be included."

III.—INFLUENCES ON THE INTERESTS OF CHILDREN IN NON-SCIENTIFIC SUBJECTS.

A.—Environment.

The original results were divided into city, urban and rural sections corresponding to the location of the schools from which they came. This was to reveal any influences of environment. Table C shows the findings from this procedure.

¹ *Nature*, Vol. 148, November 8th, 1941, p. 568, quoting "Bibliography of Research Studies in Education."—U.S. Office of Education Bulletin, 1940, No. 5.

² This *Journal*, Vol. VI, p. 162.

³ *What do Boys and Girls Read?* p. 91.

⁴ *What do Boys and Girls Read?* pp. 177 and 227.

⁵ *School Science Review*, No. 68, p. 571.

⁶ *What do Boys and Girls Read?* p. 29.

⁷ *School Science Review*, No. 68, p. 572.

TABLE C.—EFFECT OF ENVIRONMENT ON THE DISTRIBUTION OF INTEREST AMONG NON-SCIENTIFIC SUBJECTS.

<i>Boys.</i>			
<i>Subject.</i>	<i>Percentage of all Questions.</i>		
	<i>City.</i>	<i>Urban.</i>	<i>Rural.</i>
1.—Geography	31	6.0	10
2.—Vocations	22	26	28
3.—History	13	14	8
4.—General Knowledge	11	6	4
5.—Economics	5	3	1
6.—Games and Physical Training	3.4	14	16
7.—Mathematics	3.3	4.6	2.3
8.—Recreation	2.3	2.6	7.7
9.—Languages	2.3	1.7	3
10.—Religion	2.1	4	3
11.—English	1.6	5	4
12.—Music	1.2	1.6	2
13.—Craft	0.8	6.7	8
14.—Art	0.7	2.7	4.3

Correlation Coefficients: City with Urban +0.53 }
 City with Rural +0.55 } Average +0.66
 Urban with Rural +0.89 } P.E. = 0.13
 P.E. = 0.13
 P.E. = 0.04

<i>Girls.</i>			
<i>Subject.</i>	<i>Percentage of all Questions.</i>		
	<i>City.</i>	<i>Urban.</i>	<i>Rural.</i>
1.—Vocations	22	4.3	18
2.—Games and Physical Training	21	20	20
3.—Languages	14	1	5.3
4.—Recreation	11	11	3
5.—Geography	6.6	8.6	5
6.—English	5	11	6.3
7.—Domestic Activity	4.5	12	11.3
8.—Music	3.6	3	3.3
9.—Mathematics	3.3	3	2.3
10.—Craft	3.2	3.3	4.3
11.—Needlework	3.2	7	8.3
12.—History	1.6	6.6	3
13.—General Knowledge	1.0	0	4
14.—Art	0.8	5	4
15.—Religion	0.5	3.3	0.3
16.—Adornment	0.2	0.7	0.1
17.—Economics	0.0	0.0	0.7

Correlation Coefficients: City with Urban +0.55 }
 City with Rural +0.87 } Average +0.72
 Urban with Rural +0.73 } P.E. = 0.11
 P.E. = 0.04
 P.E. = 0.08
 P.E. = Probable Error of Correlations.

The inference made from these results is that no pronounced environment effect is obvious in the distribution of interest among the various non-scientific subjects. A comment relevant to this comes from Shakespeare.¹ He found physical training more popular in Worcestershire than London. However, he found no difference in the popularity of geography in the industrial and rural areas of Worcestershire.

¹ This *Journal*, Vol. VI, p. 154.

B.—Age.

To find if age has an effect on the sharing of interest among different non-scientific subjects, the original data were re-grouped for each sex so that all questions for 11+, then 12+, and finally 13+ boys and girls were amalgamated, regardless of from where they came. Table D records the results.

TABLE D.—EFFECT OF AGE ON DISTRIBUTION OF INTEREST AMONG NON-SCIENTIFIC SUBJECTS.

<i>Boys.</i>			
<i>Subject.</i>	<i>Percentage of all Questions.</i>		
	11+	12+	13+
1.—Vocations	35	23	15.7
2.—History	13	12	10.7
3.—Games and Physical Training	11	11.9	10.3
4.—General Knowledge	8	5	7.7
5.—Geography	6	14	27
6.—Art	5	1.6	0.7
7.—Craft	5	6.6	4
8.—Recreations	4	4	5
9.—Languages	3	2.6	1.7
10.—English	3	4.5	3.7
11.—Religion	2	3.5	2.7
12.—Economics	2	2.6	4.3
13.—Mathematics	2	5.1	3
14.—Music	0.8	2	2

Correlation Coefficients: 11+ with 12+ +0.89 P.E. = 0.04
 11+ with 13+ +0.48 P.E. = 0.14

<i>Girls.</i>			
<i>Subject.</i>	<i>Percentage of all Questions.</i>		
	11+	12+	13+
1.—Physical Training and Games	22	20.7	19
2.—Domestic Activity	11.7	9	7.2
3.—Vocations	10.7	15.3	18.7
4.—Needlework	10	4	4.5
5.—Recreations	9	7.3	8
6.—Languages	7	6.7	6.3
7.—English	6.3	7.7	8.1
8.—Craft	5.3	2.5	3
9.—Geography	4	9	6.3
10.—History	3.3	5.3	2.3
11.—Music	3.3	3	3.7
12.—Mathematics	3	2.7	3
13.—Art	2.7	3.1	3.7
14.—Religion	0.7	1.1	2.5
15.—General Knowledge	0.5	1.3	3.1
16.—Economics	0.3	0.3	0.1
17.—Adornment	0	0.3	0.6

Correlation Coefficients: 11+ with 12+ +0.89 P.E. = 0.04
 11+ with 13+ +0.84 P.E. = 0.05

P.E. = Probable Error of Correlations.

The correlation coefficients show that the transition from age 11+ to age 13+, has a more evident effect on the distribution of interests in boys than in girls. Girls tend to be interested in the same subjects over the whole senior age-range. Boys, on the other hand, show an alteration at 13+ in the extent to which their interest is distributed among the various subjects.

IV.—NON-SCIENTIFIC TOPICS IN WHICH SENIORS DISPLAY INTEREST.

Questions which had been asked by at least twenty children were selected. These formed 54 per cent of the total non-scientific questions and covered 120 topics. The remaining 46 per cent were spread over a large number of topics about each of which only a few questions had been asked.

Section A shows these topics.

SECTION A.—NON-SCIENTIFIC TOPICS IN WHICH SENIORS SHOW FREQUENT INTEREST.

CLASS 1.—INTERESTS IN GAMES AND PHYSICAL ACTIVITY.

Boys and Girls.—1, Physical training. 2, Cricket. 3, Swimming.

Boys.—4, How to play rugby? 5, How to play baseball? 6, Running. 7, Football.

Girls.—8, Jumping. 9, How to play dodgeball? 10, How to play hockey? 11, Netball.

CLASS 2.—INTERESTS IN RECREATIONS.

Boys and Girls.—12, Going to the cinema.

Boys.—13, Archery. 14, How to fire a gun?

Girls.—15, About film stars. 16, Picnics. 17, How to play table tennis? 18, How to tap dance? 19, Skating. 20, How to play tennis? 21, How to dance? 22, Hiking. 23, How to play golf? 24, Cycling. 25, About girl guides.

CLASS 3.—INTERESTS IN GEOGRAPHY.

Boys.—26, Climbing Mount Everest. 27, How is the height of land found? 28, What is the area of the earth? 29, What causes the earth to revolve? 30, What causes the earth to go round the sun? 31, What shape is the earth? 32, How are tunnels made under the sea? 33, How are rivers made? 34, How are mountains formed? 35, How is cotton baled? 36, Where does cotton come from? 37, How are deserts formed? 38, Height of Niagara Falls? 39, Depth of the oceans?

Girls.—40, How are maps made? 41, About whirlpools. 42, What is the circumference of the earth? 43, What lies over the edge of the world? 44, What is the longest bridge in England? 45, About farming in Australia. 46, How to forecast weather?

CLASS 4.—INTERESTS IN VOCATIONS.

Boys.—47, How are baskets made? 48-55, How to be a mason, butcher, surgeon, policeman, clerk, teacher, draper, engineer? 56, How to drive a car? 57, How to be an author? 58, How to cobble? 59-61, How to be a joiner, farmer, artist? 62, What is the best job for a boy leaving school? 63-65, How to be a sailor, boxer, builder?

Girls.—66-71, How to be a mannequin, bus conductress, secretary, dressmaker, nurse, hairdresser? 72, How to do book-keeping? 73, How to write shorthand? 74, How to use a typewriter? 75, How to serve in a shop?

CLASS 5.—INTERESTS IN ENGLISH.

Boys and Girls.—76, Reading. 77, How to spell. 78, About poetry. 79, About English.

Girls.—80, Learn elocution. 81, Composition. 82, Debates. 83, Acting in plays.

CLASS 6.—INTEREST IN LANGUAGES.

Boys.—84, How to learn Latin?

Girls.—85, Learn German. 86, Learn French. 87, How to learn foreign languages?

CLASS 7.—INTERESTS IN HISTORY.

Boys.—88, Who was the first English king? 89, Why do countries have kings? 90, Wars: questions on all aspects of war in general and the Great War in particular.

Girls.—91, Who discovered Australia? 92, About local history.

CLASS 8.—INTERESTS IN ART AND CRAFT.

Boys and Girls.—93, Drawing. 94, Woodwork. 95, Craft. 96, How to write.

Boys.—97, Metalwork. *Girls.*—98, Weaving. 99, How to do bookbinding.

CLASS 9.—INTERESTS IN DOMESTIC ACTIVITY, NEEDLEWORK, ETC.

Girls.—100, Why are cosmetics used? 101, How to do laundrywork? 102, Needlecrafts. 103, How to cook? 104, How to do shopping? 105, Housework and cleaning. 106, How to mind babies? 107, Rug-making.

CLASS 10.—INTERESTS IN RELIGION.

Boys and Girls.—108, How was God made?

CLASS 11.—INTERESTS IN MATHEMATICS.

Boys and Girls.—109, How to do arithmetic?

Boys.—110, What use is algebra? *Girls.*—111, About mathematics.

CLASS 12.—INTERESTS IN GENERAL KNOWLEDGE.

Boys.—112, Why do fire drill? 113, Why can't we sit any way in school instead of like stiff dummies? 114, Why should the strap be used on pupils? 115, Why can't we leave school as soon as we are fourteen?

Girls.—116, About A.R.P. 117, About first aid.

CLASS 13.—INTERESTS IN ECONOMICS.

Boys.—118, How to make money?

CLASS 14.—INTERESTS IN MUSIC.

Girls.—119, Singing. 120, How to play the piano?

Some of these topics of interest have already been pointed out by Jenkinson.¹ He found great interest in the cinema (see numbers 12 and 15 above), and showed that 60 per cent senior boys and girls go to the cinema once or more per week. With regard to topic 76, he found "Senior school girls . . . have a strongly developed reading habit. . . even more than boys." Concerning topics 78 and 83, he found that boys who never read poetry out of school increase from 30 per cent at 12+ to 43 per cent at 14+.² This was found by him to apply to acting in plays.⁴ Girls on the other hand, showed in his investigation a much greater interest in poetry and play-acting, so much so that he suggests teachers would do well to exploit this special interest. Perhaps topic 100 is related to a finding of Jenkinson that senior girls also display a steadily growing interest in love stories.⁴

Many questions were recorded which came from only a few individuals, or occurred only in a particular age-group; they seem to indicate that the main interests are surrounded by a large fringe of occasional interests. This may explain a finding by Jenkinson relating to the reading of children . . . "they make no response to the heavier magazines . . . their response is at the *John Bull* or *Children's Newspaper* level . . . sensational, popular, or simplified. Further, written obviously over these interests is the influence of the popular newspaper. . . ." There is evidence, especially among the occasional interests, of the persistence into the senior stage of "Interest in questions of origin and the more sensational facts and events," as was found in the case of junior children by Ball.⁶ These occasional interests reveal to the teacher something of the shadowy content of the child-mind which it is difficult to contact in ordinary circumstances; they may be used as new points of attack in lesson introductions.

NON-SCIENTIFIC TOPICS IN WHICH SENIORS SHOW AN OCCASIONAL INTEREST.

Boys.

ECONOMICS.—Why is Germany nearly bankrupt? Who first found gold is valuable? Why do we pay for milk in school? How much pocket money should a boy get? What would happen if all the miners in England went on strike? How to be rich? Why have we to buy sand shoes when mother can't afford them? Why can't this school have a radio? What wages should a boy receive?

GENERAL KNOWLEDGE.—An encyclopædia needed to deal with everything from "Who drove the speedboat *Miss England*" to "Who is the best footballer," or "Are bombproof shelters possible?"

¹ *What do Boys and Girls Read?* pp. 96 and 237.

² *Ibid.*, p. 172.

³ *Ibid.*, p. 251.

⁴ *What do Boys and Girls Read?* p. 180.

⁵ *Ibid.*, p. 86.

⁶ *School Science Review*, No. 68, p. 571.

RELIGION.—Why have we to learn psalms? Where did David go when he ran away from Saul? How old is God? Who was the better king, Saul or Solomon? Are there any ghosts?

GEOGRAPHY.—Is there a city named Atlanta under the sea? How do you know when you are at the poles? How much ice is there in Greenland? How long does a flying boat take to go round the world? How high is a Chinaman? How many islands are there in the Ganges delta? Why has Canada prairies and there are none here? Why has the Mediterranean no tides? Why is the climate hot in other lands and not here? Why does the Caspian Sea not overflow? How are oilfields found? Why is there no twilight in the tropics? Why are mountains high in Switzerland and not in England?

HISTORY AND PUBLIC AFFAIRS.—How is ancient history discovered? How did the name Great Britain arise? Who is the richest man in the world? Why are there meetings between British and foreign ambassadors? Why does England need more babies? Why on public holidays are shops closed and bars open? Why does Germany want colonies? Why do we rule Palestine? Might Hitler start a war? Why do we learn history? Who made the alphabet? Who was the first doctor to operate?

A feature of the history questions was the desire on the part of children to know everything from the inventor of the printing press to maps and who did everything from swimming the channel to flying the Atlantic.

VOCATIONS.—How to be (a) an architect, (b) a vicar, (c) a councillor, (d) a miner, (e) a barber, (f) a dentist, (g) a drywall, (h) a detective, (i) a wrestler, (j) a market gardener, (k) an opportunist?

ENGLISH.—More speech training. What is the future use of composition? How do people write stories? How to make a speech? What is the longest word in the dictionary?

Girls.

LANGUAGES.—A few questions at all ages indicating a desire to learn the less common languages like Italian, Spanish, Chinese and Swedish.

ENGLISH.—More silent reading. Phone conversations. Wireless talks. Writing letters. Who made the first dictionary? How to edit a book.

GEOGRAPHY.—What is a cyclone? Why are people coloured in other lands? What makes rivers wind in and out? How wide is Africa? Why can't roads be straight?

DOMESTIC ACTIVITY.—About child welfare. How to arrange furniture? How to arrange table decorations? About confectionery-making.

VOCATIONS.—How to become a dispenser? How to become a milliner? How to become a post office worker? How to become a window dresser? How to become an actress? How to become a bakeress? How to become a child nurse? How to wait at table? How to be a writer?

RELIGION.—What is doctrine? Why do some people not bother about Church and Chapel? How to lead a real Christian life? Why can't God be seen? What and where is Heaven? What happens when we die? Why can't every one be good? Why is there more than one religion? (Contrast with the boys' questions above).

HISTORY.—Who built Westminster Abbey? About the castles of England. Who first made music? Who invented education? Who was the first dentist? Who was the first doctor? Who was the first nurse? Who was the first mine-owner? Who built Big Ben? Who made the King's crown? Who discovered Ireland? Who gave us lines of longitude? Who invented the reaping machine? Who made the Suez Canal? How does school differ from that in the Middle Ages?

V.—SUMMARY.

(1) Fifty-four per cent total questions asked on non-scientific subjects are concentrated on 120 main topics around which cluster a large number of occasional interests. A similar result was obtained in the earlier work on scientific interests when it was found that 170 main scientific topics took up 48 per cent of the total questions asked on all science topics.¹

(2) Age changes, particularly about 13+, have more effect on boys at this stage than on girls in respect to the distribution of interest among non-scientific subjects. Girls tend to be interested in the same subjects over the senior school-age range.

¹ This *Journal*, Vol. IX, Part II, p. 126.

(3) Environment has no marked effect on the sharing of interest between various non-scientific subjects for boys and girls. However, in the earlier work, an environmental influence was found to operate on the character of the sciences which were of interest to children. This was especially marked in the case of rural children.¹

(4) Boys and girls show moderate correspondence in the extent to which they are interested in the same non-scientific subjects. In the case of the sciences, the previous investigation showed that the tendency was a more pronounced identity of interests.¹

(5) Outstanding interest is shown by both sexes in vocations, games and physical training. The previous investigation showed that in the scientific field the dominant interests of both sexes lay in biology, chemistry, mechanics and electricity.¹

(6) History and geography tend to be of more interest to boys than girls.

(7) English is often of more frequent interest to girls than boys.

Finally, I express thanks to the many head and assistant teachers in Northumberland and Newcastle-upon-Tyne for giving to their scholars the necessary instructions for obtaining the mass of data on which this investigation is based. Particularly am I grateful to Mr. Drew, Inspector of Schools for Newcastle-upon-Tyne; Mr. Paget, H.M. Inspector of Schools; and Mr. Spink, Director of Education for Northumberland, for their assistance.

¹ This *Journal*; Vol. IX. Part II. p. 129.

PERSONALITY—A PSYCHOLOGICAL INTERPRETATION.

By GORDON W. ALLPORT. (London: Constable, pp. xiv + 588, price 16s.)

It is regrettable that the review of this important book has been delayed. The reviewer to whom it was sent was prevented by protracted illness from attempting the task, though constantly hoping to begin. Hence the editor finally undertook it.

It may be said at once that the book is rich in original material. It reveals a wide range of reading in philosophy and general psychology as well as in experimental work on the particular topic. Finally, it is decisive and readable in style, though even more frequent concrete and precise examples would be a help in making clearer Professor Allport's ideas at many points.

The book is divided into five parts. Part I includes a discussion of various definitions of personality and a history of 'characterology.' Part II deals with the development of personality, including a very brief survey of early infancy and an important chapter on "the transformation of motives." Part III deals with the structure of personality with a critical account of the 'Search for Elements' and the theory of identical elements, and Allport's own doctrine of traits. Part IV is devoted to methods and results of attempts to analyse personality, where, after the frequent stressing of the essential unity and uniqueness of personality, and the acute criticism of attempts to measure elements, one is relieved and a little surprised to find that Allport has something to say after all for such devices as the psychograph and the measurement of "common traits." Finally, Part V discusses the ability to judge people, the interview, intuition, etc.

The author starts with this definition of personality: "Personality is the dynamic organisation within the individual of those psychophysical systems that determine his unique adjustments to his environment" (p. 48). It is important at once to make clear that this 'uniqueness' of adjustments is treated as consistent with the existence of "common traits" (Chap. XV). And even though these are said to be only "common aspects of traits," a man's 'adjustments' are part of his personality even when they resemble those of some other man.

A main theme of the book is the complexity of the sources of human behaviour and the supreme importance of the combination and interaction of 'drives' or 'traits,' rather than of their individual isolated functioning—a warning which is perhaps not so needed by English students as by the audience to whom Professor Allport primarily speaks.

A hurried perusal of the book would give a reader the impression that little or no place is given to the influences of innate elements in human nature, the influence of environment experience and training, and the organisation within the self being so strongly emphasised. It is all the more important that the relatively secluded passages implying the existence of *innate* tendencies should be emphasised. Thus in the description of personality in the first year (very brief and necessarily incomplete) Allport makes two most important assertions (p. 125):

- (2) "It appears that *vague and variable indications of distinctive traits are evident at an early age*, in this case at four months";
- (2) "These principles which the following pages will further establish, show that innate determinants of personality are indeed important."

Further, among 'processes of development' he includes (p. 206) imitation and suggestion as 'principles of growth' along with such unlearned things as maturation and differentiation.

Most important of all is the view as to temperament: this, he says, is "the characteristic phenomena of an individual's emotional nature, including his susceptibility to emotional stimulation, his customary strength and speed of response, the quality of his prevailing mood, and all peculiarities of fluctuation and intensity in mood; these phenomena being regarded as dependent upon constitutional make-up, and therefore largely hereditary in origin."

This surely approaches much nearer than some supporters of Allport seem to recognise to McDougall's view as to innate propensities to feel emotion in certain situations. "Susceptibility to emotional stimulation" and "Strength of response" surely grant the two essentials of the doctrine of innate impulse and innate tendency to feel emotion under certain circumstances that form the main elements of McDougall's doctrine of human instincts.

The main force of Allport's argument one feels is directed against those Behaviourists who make personality the sum of conditioned reflexes—never a popular view in this country, or against the wider view that treats the instinctive elements in men as little more than the narrow instincts in animals.

It was largely to avoid this latter confusion and misunderstanding that McDougall gave up the use of the term instinct. Yet Allport himself occasionally uses the term: thus 'The true motive underlying an attitude is sometimes of so primitive and unorganised a nature that it may be called *instinctive*.'¹

Allport devotes little space to criticising the doctrine of instincts directly. His main objection is that stated on page 112:

"Are there not many individuals who live their entire lives lacking some of these instincts, failing, for example, to become acquisitive, constructive, pugnacious, or parental in their behaviour? Is it not simpler to account for these types of interest if and when they are present, than to assume that 'instincts' are common to a species and then be forced to explain away the many exceptions where the 'instincts' fail to put in an appearance?"

Here, it seems, that Allport is really objecting to a view of human instinctive tendencies implying a greater resemblance to fixed and universal animal instincts than can be demonstrated; but it is not necessary to assume that an innate tendency widespread among men, and of supreme importance in the make-up of most men, is necessarily universal. Nature permits individual differences in all sorts of fundamental things in man—even in bodily organs essential to life, and in intelligence, from genius to imbecility. One would expect *a priori* from analogies in physiological and intellectual endowment an even greater variation in innate tendencies not essential to life, and that many persons will be lacking or very weak in some innate impulse which are main elements in the motive forces of most of their fellow-men.

Allport himself indeed at times falls back on innate tendencies to explain individual variation. Thus: "Shyness in one person, for example, may be due to hereditary influences that no amount of contrary pressure from the environment has been able to offset." That in another person shyness may arise from 'an abnormally exacting environment' one need not question.

Again Allport's discussions of the unconscious—including such topics as 'self-justification' and 'rationalisation' seem to imply the existence of a strong underlying innate impulse of self-assertion.

A central idea of the book is that of *Functional Autonomy*, by which is meant, as the author remarks, pretty much what Woodworth meant by his idea of 'mechanisms' becoming 'drives.' Some comments must be made on this important chapter. First, one can assure Professor Allport that the idea of the development of new interests through the transference of interest from an 'end' to the 'means' is a perfectly familiar one to British educational psychologists. I imagine we have all been teaching this for a long time. The transference of fundamental motive forces through sublimation, and even to fetishes, is also familiar in psycho-analytic literature.

It would also be generally agreed even by psychologists who still believe in instinctive tendencies that the accumulations of associated interests, and the results of experience, profoundly modify the crude behaviour based upon innate impulses. McDougall himself would surely have accepted the statement that "no instinct can retain its motivational force *unimpaired* after it has been absorbed and re-cast under the transforming influence of learning."

¹ Article on "Attitudes" in *Handbook of Social Psychology*, p. 819.

But Allport supplies perhaps the best example one could wish for, when he discusses the maternal sentiment (p. 197). First, I think he greatly over-estimates the extent to which mothers are indifferent to their infants during the first few days or weeks after birth. One of the most striking and incredible things to a mere man is the doting of a fond mother (or even of an elder sister) on an ugly, wrinkly, dirty, and noisy babe that keeps her from all other entertainments! No doubt the love does normally increase with time, though with some mothers the love gradually lessens as the appeal of the need of the helpless babe disappears, and that in spite of the growth of common interests.

Still more striking is Allport's later comment, viz., "some women become so absorbed in being good mothers that they neglect being the good wives they were earlier." Precisely! And this he noted even when the husband has brought her on the whole far more happiness than the baby and even when she has had little but trouble with a child, say, delicate or even defective. No stronger example is needed to exemplify the extent to which the maternal sentiment, to use Allport's phrase, is really an example of a powerful instinctive impulse.

The doctrine of "functional autonomy," Allport claims, "accounts for the force of delusions, shell shock, phobias, and all manner of compulsive and maladaptive behaviour. One would expect such unrealistic modes of adjustment to be given up as soon as they are shown to be poor ways of confronting the environment. Insight and the law of effect should both remove them. But too often they have acquired a stranglehold in their own right" (p. 206).

These phenomena are surely equally explicable on the assumption of an innate impulse whose direction can be distorted and yet the fundamental source of energy remain active. Indeed, the tendency for *irrational* behaviour to be prompted by instincts seems to be one of the strongest arguments in favour of their existence in men.

In conclusion, may I, with all deference, suggest that Professor Allport might modify his position somewhat as a result of a more complete study of infants in the first few years of life. Personally, I should maintain that here we have the strongest evidence for innate impulses of an instinctive type. It is surprising to find him saying (p. 206), "Starting life as a completely selfish being, the child would indeed remain entirely wolfish and piggish throughout his days unless genuine transformations of motives took place." As a matter of fact mere babes in arms show pleasure and delight in the presence of other infants who have never caused them any pleasure. Without any instruction or training they reveal, sometimes with delightful abandon, unselfishness and sympathetic tendencies. The child, in short, does not start life as a completely selfish being. Though I should agree if it is contended that the training of the vast majority of children must consist in checking the selfish traits and in encouraging the others, nevertheless, on the basis of my own observations I do not think that even this is true for every child.

I feel that I may seem to have dwelt quite disproportionately upon the objections to Allport's views. I hope he will take it as revealing my view that the book itself is so powerful an exposition of his point of view. Even for advanced students of psychology it could not fail to throw considerable light on all problems of personality. To the adherent of the Behaviourist School, or of a superficial psychology which glibly attributes all human actions simply to some crude instincts, it would be a most valuable corrective.

There are many other points in this book with which British psychologists generally would heartily agree. For example, none, I think, have ever held the view that character training can only proceed by training in specific habits; and in the matter of mental training they have always kept a place for 'transference' where a method or ideal can be apprehended and applied.

Later parts of the book are also full of shrewd comments and observations upon common traits and on the methods of studying and analysing personality. In short, it is a most valuable book, and it is partly because I am anxious to enlist Allport more on the side of the views to which he seems opposed that I have stressed many of the points selected.

C. W. VALENTINE.

BOOK REVIEWS.

Selection for Secondary Education: By WILLIAM MCCLELLAND. (University of London Press, pp. 264, 5s.)

This volume is described as "the final report of the Scottish Committee in the International Examinations Inquiry initiated by the International Institute of Teachers' College, Columbia, and financed by the Carnegie Corporation and Foundation." In his foreword, Prof. Drever explains the place of the present research within the larger scheme. In Scotland the whole series of inquiries have been envisaged as involving three main stages. The first was represented by the preliminary surveys of the general school population carried out between 1932 and 1937. The second was to consist in "a scientific study of problems of selection and guidance," and especially "of tests and other forms of examination or assessment as a means of choosing pupils for higher education"; this is the problem with which Prof. McClelland's report is pre-eminently concerned. The third task was to attempt a mental and scholastic survey of the population in the later educational phases: this has unfortunately been cut short by the war. Nevertheless, the inquiries already completed form a noteworthy achievement, and should make a valuable contribution to the discussions now going forward in regard to post-war changes in educational organisation.

The principles and practice of education in Scotland differ, we are often told, from those in other parts of Great Britain. Accordingly, it may be instructive to ask how far the researches of the Scottish Committee are in agreement with those carried out elsewhere. There is, to begin with, a close similarity between the scheme as a whole and the general plan drawn up for the London Education Authority towards the close of the previous war: there, too, a general survey of the distribution of mental and educational abilities was found to be the first essential; that was also followed by more intensive studies of methods of selection for secondary schools, trade schools, and schools for the mentally defective; and, finally, a large number of individual pupils and a small number of typical groups were followed up for many periods until children who had been tested in the infants' or the junior departments had completed their courses at secondary schools or at universities, or else had spent at least a probationary period in some commercial or industrial post. These and other analogies suggest that, although the organisation of education may differ widely from one area to another, the fundamental problems are everywhere much the same, and call for much the same general mode of approach.

In the detailed methods of investigation and the concrete solutions proposed, there is more room for divergence. Psychologists are repeatedly reproached for their heated controversies over matters of statistical technique. Prof. McClelland's report, however, yields striking evidence that the points of agreement are far more numerous than those of disagreement. First of all, in spite of the numerous attacks recently launched against those psychologists who have a partiality for correlation coefficients, we find that the main basis of the inquiry is essentially a correlational technique. Other conclusions reached during the London inquiries which here find confirmation are the following: marks allotted by teachers tend usually to under-estimate the bright and over-estimate the dull (i.e., the teachers' standard deviations are too low); their implicit norms differ widely from one school to another (i.e., their averages vary far more than can be accounted for by the mere fact of sampling); to impose the same average and the same standard deviation on all by prescribing a 'standard scheme of marking' results in an appreciable, but insufficient improvement, hence the only satisfactory procedure is to re-scale the marking by means of an objective and uniform examination or test; the mere quantitative marks obtained from teachers, tests, or formal examinations, no matter how well they are standardised, still need to be supplemented by 'psychographs' (or 'profiles,' as the report prefers to call them) supplying standard scores for industry, health, practical work (as well as for the stock subjects of the elementary curriculum); partial regression coefficients form the ideal way of weighting tests for theoretical purposes, but yield too small an improvement to be worth adopting for practical purposes; a minimal discrepancy pass-mark (with the borderline internally determined from the regression-line) is useful for theoretical inquiries, but must be replaced by a percentage borderline in actual practice; age-allowances tend to impair the selective efficiency of the examination, but are essential when the children examined are born in different months of the year.

But Prof. McClelland's report is far more than a mere corroboration of earlier methods or conclusions, tentatively arrived at in this country or elsewhere. It is a highly original contribution, first to certain urgent issues raised by the Scottish 'qualifying examination' as at present carried out, and, secondly, to the whole problem of awarding scholarships for secondary education. The main basis of his research is a 'follow-up inquiry' of over 3,000 boys and girls who formed the 'qualifying group' in Dundee in the session 1935-6. The final outcome may be briefly summarised as follows: The 'best predictive combination' is furnished by combining: (1) an intelligence test; (2) the qualifying examination (total score in English and arithmetic); and (3) the teachers' marks for English and arithmetic, re-scaled for each subject on the results of a uniform examination for each. The addition of standardised scholastic tests (Moray House Tests of English and Arithmetic) does not yield so good a result (possibly because the tests were too brief); the substitution of such tests for the teachers' marks yields a still poorer result. "As regards the merits of the single measures . . . a carefully set and corrected examination is the best basis for predicting success in the secondary school; thereafter the order

: teachers' scaled marks, standardised scholastic tests, and intelligence quotient." In one respect he results reported differ suggestively from those obtained in earlier researches. Nearly all the correlations are much higher. For example, the correlation between teachers' estimates and total marks in the qualifying examination rises to .91. The 'follow-up correlations' are highest for the senior secondary school (.70 after one year); much lower for the junior (technical .59, commercial .55). The figures diminish or later years, but not so much as we might have anticipated.

The whole inquiry is unquestionably one of the most important of all recent contributions to educational psychology, and forms a model for future investigations. Not only Scottish readers, but all who are concerned in the theory or practice of education should study it, no matter where their field of work may lie. To have carried to a successful conclusion a co-operative research on this extensive scale in war-time is indeed a remarkable feat.

The Natural Development of the Child: By AGATHA H. BOWLEY. (Livingstone, pp. xvii+172, 8s. 6d.)

This attractively produced book gives a brief survey of development from earliest infancy up to and including adolescence and is intended as a guide for parents, teachers and students. The first chapter deals chiefly with the first two years, and forms a satisfactory introduction, except that Dr. Bowley suggests that the infant at this age may feel intensely 'guilty' about his aggressive feelings, though no indication is given as to how we can infer a feeling of guilt at such an early age. It is also suggested that the mental "effects of poison" that little children express in their play . . . "must arise from these early fears, though it would seem highly questionable whether the average child under two can have any conception of what might be the effects of poisoning. However, these feelings are later said to be to a large extent unconscious, and the evidence apparently at the back of such surmise is the psycho-analytic study of babies.

After infancy the pre-school age is dealt with and then difficulties during the pre-school period occupy as much space. Then comes a chapter on the middle years of childhood, followed by a much longer one on difficulties during the middle years. The chapter on adolescence deals with both development and difficulties. Thus, the book as a whole is more concerned with 'difficulties' than with the other aspects of development; and although Dr. Bowley points out rightly that many of these difficulties are to be found in nearly every child, the close association of illustrations from abnormal cases studied in the Child Guidance Clinic with the description of the average child is, I fear, apt to give to the ordinary parent and uninstructed student a warped idea as to probable difficulties and the seriousness of many minor ones. Herein, I think, lies one of the dangers of studies based to such a large extent upon children in the Child Guidance Clinic.

When the details of treatment in the clinic are given the evidence sometimes hardly justifies some inferences. For example, on p. 62, Dr. Bowley first describes destructive behaviour as a natural phase of development. This is true; but two pages later, discussing the case of the little girl Molly, aged five years, who was very restless and destructive, she says Molly's symptoms were fairly mild and were sometimes directed against her brother and sister; but if destructive behaviour is a natural part of development, why should we assume that it is part of special aggressiveness towards another? The temptation to do so is, no doubt, clear when one knows that the child is aggressive towards a younger brother or sister. Again, "She appeared also to be reacting to some extent to her illegitimacy." How can this be inferred?

It is regrettable that such weaker aspects of the treatment appear frequently, because the book contains much that is very useful and much sound practical advice to the student who is beginning the study of child psychology, to nurses and to parents intelligent and well-informed enough to read some of the passages with a critical attitude. One might add that many pleasant photographs add to the pleasing production of the book.

A Biological Introduction to Psychology: By R. J. S. McDOWALL. (Murray, London, pp. xiv+210, 6s.)

This is a brief book intended for students and practitioners of medicine, by the Professor of Psychology, King's College, London.

The book hardly conforms to its title. It has, of course, a good many references to the nervous system, but it is not primarily biological. It avoids the extremes that are so often found in the psychological writings of medical men; on the other hand, it suggests a study of psychology by the author based almost entirely on the writings of other medical psychologists. The lack of background, apart from some study of McDougall, is frequently evident. Thus the author thinks that word association tests were first used by Jung, and he occasionally speaks of 'psychologists' saying this and that in a way that would only be true of certain schools of medical psychology. Again (p. 40), the writer states that *Freudians* look upon the instincts as being possessed of a kind of energy. Apparently the writer thinks that by Freud we were provided for the first time with a dynamic view of mental activity (p. 128).

There is a brief appendix of four pages on tests, the writer's view being that "it is doubtful if they are of any more value than the considered judgment of an experienced teacher who has observed the pupils engaged in various activities for a considerable period." He also states that it is commonly ignored by *psychologists* that the mother hate is by no means a universal feeling of daughters any more than father hate is universal among men: again the identification of psychologists with *Freudians*.

The topics discussed are arranged under such headings as the following: The Security Instinct, The Power Urge, The Herd Instinct, Frustration and Complex, Escape, Personality, and a chapter on "Spiritual Urge." This last is defined as follows: (p. 80) "the urge or emotion which manifests itself in such qualities as justice, honesty, honour, conceptions of right and wrong, idealism, piety, purity, fraternity, liberty, equality, love, kindness, sense of beauty, and so on."

This will give a clue to readers of this *Journal* to the type of treatment in this book.

An Inquiry into the Prediction of Secondary School Success: By W. G. EMMETT. (University of London Press, Ltd., pp. 58, 1942.)

The subjects of the inquiry were 765 children who had remained for three years in certain West Riding secondary schools. The I.Q., English score, and arithmetic score of each child at the entrance examination, together with the head teacher's assessments at the end of the second and third year in the secondary school, were the variables, which have been treated with the masterly skill and competence expected from a Moray House investigator.

The intelligence test was found superior in prognostic value to the English and arithmetic papers. Very unfortunately the West Riding awards at that time were mainly made on the scores in English and arithmetic, but the author rightly points out that the method of giving awards is irrelevant to his present purpose, which is to correlate scores in the admission examination with estimates of secondary school progress. That was also the problem and the purpose of Stubbins (*this Journal*, Vol. X, Part I, February, 1940). The author writes that Stubbins used regression coefficients for raw scores, but owing to absence on national service he possibly did not see Stubbins's communication of June 29th, 1940, showing that little error accrued.

The booklet will prove valuable for research workers, but we must warn readers that only those conversant with matrix algebra can hope to understand the calculations in the three appendices.

A generally accepted meaning of "success in secondary school life" will never be obtained, and even if we agree on the way to assess the intellectual aspect of it in the secondary school there still remains the task of devising entrance tests. A common method is to add up English, arithmetic and intelligence marks. The reviewer has suggested another (*this Journal*, Vol. VI, Part III, November, 1936, p. 312). Whatever method is adopted there will still be scope for techniques such as that so successfully carried out by Mr. Emmett.

LL.W.J.

A Study of the Factors influencing the General Development of the Child during the pre-school years by means of Record Forms: By AGATHA H. BOWLEY. (Cambridge University Press, 1942, pp. 104, 12s. 6d. net.)

This research appears as Monograph Supplement No. 25 of the *British Journal of Psychology*. Its basis is a record form for use with children aged two to four years eleven months. A scoring method was devised for measuring motor development, language development, emotional development, and social adjustment. A rating was given to economic status, health standard, and play behaviour. The I.Q. was found in most cases on the Merrill-Palmer Scale.

Dr. Bowley's experience in nursery school work and in child guidance has served her well. The treatment of social-emotional development deserves particular attention as norms here are difficult to establish. In the absence of norms the clinician without adequate training in psychology is apt to draw conclusions in terms of his own idols. Emotional difficulties occur in most children, but, as Valentine has pointed out, the total situation to the child at the particular time must be considered. A minor point is that the reviewer is not sure after reading pages 36, 42 and 62 whether the maximum score on the social scale is twenty-one or twenty. Dr. Bowley is convinced that a fuller understanding of play has been arrived at by psycho-analytic studies and mentions the types of children who benefit from play therapy.

The account of the effect of nursery school training on I.Q. refers to American investigations carried out prior to the appearance of the Merrill-Terman Scale. It may therefore be pertinent to supplement it by mention of Miss Amma's work in the reviewer's laboratory in 1939: The Merrill-Terman tests for which nursery training seems beneficial were absurdities, giving differences and similarities, defining abstract words, comprehension, finding rhymes, and Minkus completion.

LL.W.J.

Psychology and Religious Truth: By THOMAS HYWEL HUGHES. (George Allen and Unwin, pp. 160, 7s. 6d.)

Four lectures delivered at Bangor University College form the basis of the book. They deal with the central doctrines of Christianity illuminated by modern psychology, though in some instances the interpretation is not as new as the author suggests. He rightly says that psychology compels us to look at theological questions in terms of personality and experience. A deeper insight is gained into the Atonement, for example, through the concept of personal relationships than by *a priori* notions of the abstract justice of God.

Dr. Hughes has an answer to those psychologists who condemn religious experience as an illusion and the idea of God as a mere projection. He refers to the child psychology of Piaget, who believes that

the child will almost inevitably come to a conception of God—a view confirmed by Selbie, Pratt and Jung. His reply to Freud, who traces religion to the sex instinct, is that sex is a secondary element derived from a more general "will to live"; religion claims not a part but the whole of man's nature.

Dealing with psychology and religious truth, the author seeks to resolve the antithesis between the authority of the individual conscience and that of the Church. His comment on the theory of revelation through the unconscious is that if this means the Freudian unconscious with its repressed wishes and frustrated emotions, it is difficult to see how lofty spiritual truths can come through such a channel.

In the section on the Trinity, 'persona' is distinguished from the modern idea of personality, though Dr. Hughes does not help his own argument by such phrases as "three centres of existence." He justly condemns analogies based on the threefold aspect of human mind. The attempts to explain the dual nature of the Person of Christ in terms of the dual personality of psychology are similarly rejected.

Unfortunately the book contains numerous inaccuracies: not simply misprints, but misquotations, mistakes in grammar and syntax, in author's names and titles of books. The reader's attention is continually being distracted by such strangers as Yahwah, Yaheveh, Leibnitz, Gestaltdt, Nichodcmus, A. E. Peake, Adam Welsh and Calcedon. Well over a hundred of these have been counted. One feels that if the writer is not to be trusted in details it is unsafe to follow him in weightier matters. This is a pity, for Dr. Hughes is a scholar, and we value his previous books.

F.R.

General Psychology: By WILLIAM STERN. (Macmillan, New York, 1938. Translated by Howard Davis Spoerl.)

This is a welcome English translation of Professor Stern's book, the original of which was in German. The text has been revised to meet the requirements of English and American readers. Considerable changes have been made, although these do not affect the substance. Most are shortenings but there are a few additions.

The plan and scope of the extensive bibliography have been considerably altered. It has been simplified and brought up to date. It is in six sections appended to the six parts of the book. The headings of these six parts give an indication of the wide field covered: (1) Outline, (2) Sense Perception, (3) Memory, (4) Thought and Imagination, (5) Striving, Acting, Achieving, (6) Feeling.

As regards the translation, a difficult undertaking, the author himself pays tribute, in the preface, to the translator's "psychological facility, linguistic delicacy, and indefatigable endeavours."

F.M.A.

Young Offenders, Yesterday and To-day: By GERALDINE S. CADBURY, D.B.E., J.P. (George Allen and Unwin, Ltd., 1938.)

This very interesting little book tells a vivid story of children who have broken the law and of their treatment from Saxon days to the present time. The numerous illustrations add to its interest. It is full of wisdom gained in long experience of Law Courts at home and abroad, and should prove of great value to all who have responsibility for dealing with juvenile law-breakers.

The writer recognises that most boys and girls who come up before the courts differ little from others, and that probably the cause of the most serious trouble comes from the homes. It is pointed out that it is difficult for magistrates to know which children need the help of a Child Guidance Clinic, and that probation officers can sometimes help the magistrates to decide this. One may perhaps suggest possible remedies for this, in particular a better choice and training for magistrates and probation officers which will give them sufficient knowledge of general psychological facts to make their task easier. Progress in this field has been so slow that it is unlikely that we shall soon see the day when all juvenile offenders are referred to a Child Guidance Clinic for routine examination, observation, and report. The clinic is primarily concerned with the child, but it does, and must, extend its investigations to the home of the child, and in doing so gains very useful information. In some cases it is by this means able by tactful guidance of parents or relatives to help not only the child concerned but society at large. On reading this book and looking back over hundreds of years we can see that progress has been made, but future progress should be measurable in decades, not only in centuries.

F.M.A.

Broadcasting For Democracy: By OTTO FRIEDMANN. (George Allen and Unwin, Ltd., 2s. 6d. net.)

This booklet is written by a Czech and dedicated to M. Jan Masaryk, Czechoslovak Minister of Foreign Affairs. The Master of Balliol has written an introduction. The writer analyses German propaganda, and discusses the essentials of democratic propaganda, contrasting the two methods. He emphasises the necessity of selection of material, issues and propagandists, also of centralisation and of a basic plan. A plan of propaganda is suggested, and an offer of co-operation with others is made so that by collective effort better methods and better use of propaganda may be evolved.

Clearly methods and materials must change with circumstances, but certain psychological principles are unchanging. Moral principles, too, can be decided on and worked for steadily.

Dr. Friedmann's pamphlet is well worth reading, and his suggestions well worth consideration.

Developmental Aphasia in Educationally Retarded Children: By M. MACMEEKEN, M.A., B.Ed., Ph.D. (U.L.P., pp. 95. 3s.)

This enquiry sets out to show that "the core of stubborn backwardness, where this is not due to low mental capacity, is provided by a well-defined pattern of difficulty, affecting especially language and learning, and showing itself in the confusional characters of so-called developmental aphasia." In an admirably conducted research, weighty evidence was adduced on three points: (1) low innate capacity plays a greater part in retardation among girls than it does among boys (73 per cent of the girls and only 41 per cent of the boys showing a decided amount of retardation in reading and spelling, have I.Q.'s of less than ninety); (2) where retardation is not due to low innate capacity, the incidence of sinistrality is higher than would be expected in a normal population (70 per cent as against 37 per cent of the normal population); (3) there is a sex difference in the incidence of sinistrality among retarded children (52 per cent in boys against 18 per cent in the girls). These facts are admirably set out in a series of tables illustrated by diagrams which are easily read by even the non-mathematical.

As regards the main thesis, the case does not seem to be so fully proved. The fact that while 70 per cent of the backward group show sinistrality must be put side by side with the incidence of sinistrality in the total group. Of the total group of 1,487 children, there is a normal expectation of some 400 cases of sinistrality, but of this number only forty-seven showed retardation not due to low mental capacity. If it is to be assumed that sinistrality is the main cause of retardation in these forty-seven cases, there must be alleviating factors in the remaining 350 cases where there is no retardation. Until such alleviating factors are discovered the enquiry does not seem to have done more than amplify the view put forward by both Dr. Burt and Dr. Schonell, that under certain conditions only sinistrality may become a major factor in retardation. B.B.W.

Probation for Juvenile Delinquents: AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH. (Melbourne University Press, pp. 49, 1s.)

This booklet, as is stated in the introduction, consists substantially of a reprint of some sections of the *Handbook of Probation* (London, 1935), a book already held in high respect by probation officers in this country. It achieves its object of providing an outline of the principles involved in the more enlightened treatment of the juvenile delinquent, and its conception by the Australian Council for Educational Research gives point to the growing awareness of the importance of probation.

The general section of this work is reminiscent of an address given by Sir William Clarke-Hall to probation officers at Worcester in 1932, in that it draws attention to the outstanding need for, firstly, well-selected and carefully trained probation officers and, secondly, a preliminary enquiry by the probation officer prior to the passing of sentence on any offender.

These points are again emphasised when we are told of the variations, from State to State, in the personnel available as supervisors and the periods of probation assigned. It is essential to provide trained personnel; a position recognised in England in the 1907 Act and the introduction of the Home Office Training Scheme in 1930. It equally is obvious that the period of probation assigned should depend upon the offender and not on the State concerned; hence the need for the considered preliminary report by a trained observer.

The sections quoted from the *Handbook of Probation* are well followed up by a comprehensive bibliography in which possibly references to H.M.S.O. publications and the Clarke-Hall Fellowship lectures might have been included. It was pleasing to note a reference to the outstanding follow-up work of S. and E. Glueck (*Juvenile Delinquents Grown Up*).

In general, this booklet draws attention to the outstanding requirements for the successful application of probation, and at the same time it indicates points for study which would provide the background necessary for all who are connected with this important work. E.W.H.

Man and His World: By JAMES MAINWARING, M.A., D.Litt. (Books 1 and 2, London, Philip and Son, pp. xi+270, 4s.; and iv+349, 6s.)

In these most attractive books Dr. Mainwaring has provided not only most readable material for school pupils and for adult classes, but also a remarkable study in method of the teaching history and geography, a method moreover which has been proved a great success in a number of schools. The aim cannot be better described than it is in his own preface: "the understanding of the present by regarding it as a phase of human development traced from the beginning: by interrelating the facts of history and geography and by relating them to the preceding and succeeding events and thence to the present, to show Great Britain as an element in a world fabric: and, further, to relate them to the reader, whose life so obviously must have been influenced by his immediate and remote past, and immediate and remote environment." This aim is admirably sustained throughout.

In the third volume still to come Dr. Mainwaring proposes to deal with the world and its wealth, introducing the dispassionate study of many modern problems. The author has himself illustrated the books lavishly with many delightful maps, and added many other illustrations, so that young people on opening the books will get a vivid impression of the interest awaiting them. Indeed, the reviewer has never seen any maps and diagrams more simple and attractive or more suitable for the purposes intended. The books deserve a wide sale.

The Principles of Army Instruction: By C. W. VALENTINE. (Gale and Polden, Aldershot, pp. v+36, 1s.)

Alive to the importance of sound instruction, the War Office asked Professor Valentine to write this book, based partly on a larger memorandum prepared for the Army Department of Training. It is no academic exercise but a reasoned application of psychological principles to training. Personal knowledge of Army methods, amplified by visits to instruction centres and the carefully analysed reports of many former students, make the book so practical and pointed that, after two years as a sergeant-instructor adapting the technique of civilian teaching to new conditions, I found much to learn. The untrained instructor can, in an hour, have access to the material for self-criticism and improvement which would otherwise cost months of mistakes. Yet the direct style, free of technicalities and the wealth of concrete example make easy reading; and the summary of main points should be hung wherever instructors congregate.

W.D.W.

Forecasting Teaching Ability. Bulletin No. 8 of the Department of Educational Research, University of Toronto: By PETER SANDIFORD, M. A. CAMERON, C. B. CONWAY and J. A. LONG, 1937. (50 cents.)

Owing to continuous increase of unemployment amongst teachers in the Province of Ontario an attempt was made in 1934 to find a way of forecasting teaching ability and restricting the number of teachers in training. This bulletin gives an account of two investigations which were made. The experimenters consider that both gave disappointingly negative results, but publish the methods and findings to indicate to other workers in the same field the difficulties of the problem and the unfruitfulness of the methods used.

They hope a positive solution may be found, and indeed in their own findings here and there are some positive factors of importance.

There is a useful bibliography.

EDITORIAL NOTICE.

In the next number of this *Journal* there will begin a series of articles on the Adolescent--Youth Training, Delinquency, Vocational Guidance, Sex Education, and Co-Education.

Readers are reminded of the announcement made in the June 1942 number that persons who subscribe to the *Journal* through the period of the war will receive free of charge an extra number to be published after the end of the war if sufficient articles accumulate.

ADOLESCENCE AND SOME PROBLEMS OF YOUTH TRAINING.¹

BY C. W. VALENTINE.

I.—*Introduction.* II.—*Frequency of varying moods in adolescence. Various ages for the onset of adolescence.* III.—*Should we discuss adolescence with adolescents?* IV.—*Instability of interests.* V.—*Interest in future vocations.* VI.—*Delinquency during adolescence: (a) The peak age for boys; (b) Delinquency and membership of youth clubs; (c) Attendance at church and evening schools; (d) Home discipline and the education of parents; (e) Inmate qualities and delinquency.* VII.—*The youth movement and club membership: (a) Some facts from the Birmingham area; (b) Is compulsory membership desirable? (c) The problem of compulsory service.* VIII.—*Summary.*

I.—INTRODUCTION.

As announced in the last number of this *Journal*, we are proposing to publish a series of articles dealing with adolescence, and covering such problems as further education, youth training, juvenile delinquency, etc. While the series will not take the form precisely of a symposium, it should have a unity of its own. In this introductory article I do not propose to attempt a comprehensive discussion of the major problems of adolescence and youth training, but rather to call attention to certain selected principles or facts which should be borne in mind in dealing with our young people, to supply further evidence on one or two of them, to question some assumptions often made and to raise certain problems which I hope some of our subsequent writers will discuss. With these will be combined some comments on a recent important research on juvenile delinquency.²

I shall assume a general familiarity among readers with the main characteristics of the adolescent, but shall report some results of further enquiries I have made among university students by means of questionnaires and confidential essays. Here a word may be said in defence of the use of the questionnaire among young men and women who have only recently passed out of the period of adolescence. Provided that these reports are anonymous as in my own enquiry, I am sure that one can gain valuable information from them. I myself have obtained such reports from over two hundred university students. Similar reports have been given by Professor Olive Wheeler as to students and workers,³ and, of course, the classic work of Stanley Hall includes records of many more. In using such questionnaires, however, one must beware of the danger of distributing them widely and then only dealing with the selected records from those who have taken the trouble to reply. Such are liable to be those who have something particularly interesting to report of their adolescence, or those who enjoy the opportunity of writing about themselves. This danger is avoided when one presents the questionnaire to a given class of students and gets replies from every one, though, of course, we have to bear in mind the selected nature of the class itself, in this case university graduates preparing for the teaching profession. (Professor Wheeler's reports on workers form a useful check on some of the results gained from university students.)

In addition, I had some hundred or so confidential essays from students based largely on their own adolescent experiences, which were astonishingly frank. (I guaranteed that no one should read them except myself.)

¹Part of this paper was read at the Annual Meeting of the British Psychological Society at Oxford, April, 1943. I should like to express my thanks for several helpful comments by Professor C. Burt, to whom the Editor sent this paper for consideration and criticism.

²A. M. CARR-SAUNDERS, H. MANNHEIM and E. C. RHODES; *Young Offenders*.—A brief general review of this book is given on page 107.

³See her article in this *Journal*, Vol. I, 1931, and her book *Youth*.

II.—THE FREQUENCY OF VARYING MOODS IN ADOLESCENCE.

The table gives a summary of the results of my questionnaires, given to graduate students in the years 1926, 1927 and 1930. The items are suitably grouped in the table, but in the questionnaires they were more haphazard to encourage independent reports to each item.

TABLE I.

PERCENTAGE OF STUDENTS REPORTING A MARKED INCREASE IN, OR INTENSIFICATION OF, THE FOLLOWING DURING ADOLESCENCE.

120 WOMEN: 100 MEN.

	Men.	Women.
Gregarious impulse	61	64
Interest in opposite sex	84	61
Aversion from opposite sex	43	45
Interest in member of same sex	50	72
Religious interest or experience	78	74
Decline of father's influence	54	39
Increase of father's influence	45	27
Decline of mother's influence	44	35
Increase of mother's influence	40	42
Hero-worship of teacher	37	57
Expectation of future greatness	66	57
Moods of intense dejection	61	76
Contemplation of suicide	38	29
Contemplation of running away from home	40	33
Interest in group games	73	70
Writing of stories	50	48
Writing of poems	56	57
Reading habit	90	79
Appreciation of music	69	71
Executive work in music	54	66
Appreciation of art	54	62
Executive work in art	45	57
Appreciation of nature	61	66

Special attention may be drawn to the following: The great frequency among women of religious interests, of moods of intense dejection, and of a special interest in a member of the *same* sex, and among men the frequency of interest in the opposite sex, and of moods of intense dejection and even thoughts of suicide, and of expectation of future greatness.¹

VARIOUS AGES FOR THE ONSET OF ADOLESCENCE.

There is general agreement that some of the main characteristics of adolescence, especially the instability of emotions and impulses, are closely connected with, if not entirely dependent upon, the maturing of sex. A point here which is apt to be overlooked is the very wide range of ages at which sex maturity arrives. For example, among girls

¹ When handing round the questionnaires further explanations of some of the terms in the list were given; thus 'interest in the opposite sex' was to imply a feeling of real attraction, something regarded as 'love'; the 'contemplation of suicide' was not merely thinking of it, but a felt impulse towards it. But it is not suggested that such experiences were as serious as the adolescent felt them to be at the time. For example, one youth who actually ran away from home early one morning did not go far, but returned in time for breakfast! Two actual attempts at suicide—no doubt half-hearted—were reported.

in the U.S.A. one-quarter begin menstruation before the age of 12½, while one-quarter do not begin until after 14½.¹ While there does not seem to be a complete correlation between puberty and the mental stages, the very close connection is enough to caution us against treating a given set of children of twelve or fourteen as essentially at the same stage of development.

Further evidence of the great variation in the ages at which development of various characteristics appears is given by the reports of my students. They were asked to state the age at which the particular phenomena (1) began, and (2) ended, if at all. We find such facts as the following:

Women.—Decline in the *father's influence* began frequently at 10, 11, 12, whereas for the majority a decline had not begun even at university stage—22 or 23 years. An *increase* in the father's influence similarly began at varying ages from 7 or 8 to 22. The moods of intense dejection began at 12 or 13, but for some not till 19 or 20. Contemplation of suicide varied from 12 to 20; running from home from 8 to 20. The beginnings of intensification of religious interest varied from 6 to 19, aversion from the opposite sex, 8 to 16 (or never). Interest in the opposite sex began at ages varying from 8 to 20, special interest in a member of the same sex, 9 to 18. Intensification of the gregarious impulse, 8 to 21.

It is true that the students might put different interpretations upon the various terms—intense dejection, aversion from opposite sex, etc. But some at least of the differences could hardly be explained by this—e.g., the difference between the contemplation of suicide at 12 or 13 and the fact that in the majority it had *never* occurred up to 22 or 23. Again, one could hardly confuse an *increase* in the father's (or mother's) influence during adolescence with a *decrease* of that influence.

Among the *men*, keen ambition represented by "expectation of future greatness" began in some as early as 8, in others as late as 18, in others it had not occurred at 22 or 23.

A keener interest in group games began at varying ages from 8 to 19, and in a few cases even later—perhaps through lack of opportunity before. Intensification of hero-worship of the teacher varied from 10 to 16.

These marked differences between ages at which the many special characteristics of the adolescent appear afford further evidence that any given group of youths of, say, 14 to 16, or 16 to 18, cannot be regarded as homogeneous.²

The confidential essays I received afford a wealth of concrete illustrations of the variations of mood and other characteristics of adolescence. I hope to give a fuller account of these at a later date. Here I will only quote a few which have a bearing on the next or some later section of this paper.

Students repeatedly assert that they thought their own most intense experiences to be peculiar and perhaps unique. They carefully kept secret their intense dejection and thoughts of suicide or their worship of a senior girl. One who described a period about 16 years of age as one of 'absolutely unrelieved gloom'—with a 'desperate angry bewilderment'—discovered eventually another girl who felt similarly and "sympathy eased the agony. I achieved a certain detachment from my own gloom in contemplating another's." There is only one record of an intimate feeling being openly expressed, namely, when one girl expressed her loneliness in a poem for the school magazine, beginning, "I am unwanted and hated"—which her parents read with astonishment. This girl writes, "During adolescence my make-believe play changed from fairies to psycho-analysis. I played for hours, at first with a cousin, then later alone, the same type of story: it was always about a difficult child who really only needed love and understanding to become exemplary—and at last she found it." This girl obtained first-class honours at the university and became a very effective teacher.

The main sources of mental trouble seemed to the youths to be sometimes intense self-consciousness (accentuated if there was excessive size or extreme awkwardness),

¹ LETA HOLLINGWORTH: *The Psychology of the Adolescent*, p. 20.

² PROFESSOR WHEELER also gives evidence of variations in the time of emotional development.—This *Journal*, Vol. I, p. 3.

sometimes distress at social evils which seemed insoluble (unless the individual could have a free hand to deal with it), sometimes unhappy relations with parents, sometimes struggles with doubt about religion, sometimes disgust or fear at the first experience of sex emotions, or, as in the case of girls, of premature advances by boys or men.

Several speak of the loss of parents' prestige in these adolescent years, of parents who thought only of the youth as a child, "*their* child, with the stress on the possessive, never thinking of me as a separate entity with my own feelings and emotions." There were also comments which confirm the general view that the adolescent's wish to be independent of his parents' support and to feel himself a 'man' and enjoy greater freedom is a main reason for wishing to become a wage-earner at 14 or as soon as possible.

The dreams of future greatness take very varied forms, from ambitions as 'social reformers' to a great desire to rival a world champion boxer in physical strength.

One thing is clearly demonstrated by some of the essays, namely, that some of the intense feelings of inferiority during adolescence were utterly wrong and were consistent with remarkable strength or ability which was clearly demonstrated a few years later, even in those very things in which weakness had been felt. Thus one woman student wrote: "The feeling I most connect with the period of adolescence (which in my own case did not end, I think, till about 20) is complete lack of confidence. A remark about my lack of confidence was put on my report by one of the staff." Yet this girl became head girl of an important school, gained first-class honours at the university, and at 23 in her diploma year was carrying out the duties of Lady Mayoress of a Midland borough with dignity and apparently calm confidence.¹

Another student writes of 'a heightened, perhaps exaggerated consciousness of stupidity and general inferiority'; sometimes feeling 'an intolerable sense of failure,' yet she, too, obtained first-class honours in the B.A. examination.

Yet these feelings of inferiority and self-consciousness, common though they are, are not invariable. Another student writes that she had a "self-assurance far beyond my years according to others. I had a habit of command which sat far more easily on my shoulders than it does now."

Another fact which emerges clearly from the essays is that some of the girls who had most intense feelings of affection for older girls or mistresses—real 'crushes' turned out to be among the finest in character and ability at university stage. Some of these 'G.P.'s' caused great unrest—the girls acting like fond doting lovers—kissing the book lent to them by a beloved mistress, walking up and down the road past the house where the loved one lived, and so on.²

III.—SHOULD WE DISCUSS ADOLESCENCE WITH ADOLESCENTS?

A practical problem arises as to how far we could help the adolescent by letting him know that the great variations of mood, of extreme elation and dejection, the contemplation of suicide, etc., are often passing phases of the adolescent life. It may seem at first that talks to youths about the characteristics of adolescence would necessarily be useful and such talks have indeed been suggested by some important bodies dealing with the training of young people. Such a view is, I think, sound so far as experiences that cause unhappiness or anxiety are concerned. It would seem helpful to inform an adolescent that he is likely to be subject to extreme moods and, in particular, that he is not alone in the unhappy inclinations to run away from home or even to commit suicide. My own reports show quite clearly that a great many adolescents are apt to feel a greater distress at their own inner struggles because they think they are almost unique. Large numbers of students have reported to me that they imagined such severe emotions were extremely rare.

¹ I have this student's permission to make this report.

² In another enquiry in which students who had been at co-educational schools were compared with those at single sex schools such homo-sexual attractions were far less frequent in the co-educational schools and students from these schools were almost unanimously in favour of them. I hope to give details of this enquiry later.

On the other hand, to speak to adolescents of the common intensification of religious interest, or of high ideals, as passing phases or exaggerations of youth, or of the expectation of accomplishing great things in life as a common illusion, would seem clearly undesirable.

One matter at least, I think, could be openly spoken about, namely, the plain facts of sex development. It is clear that even in these days, in some cases, young people are allowed to experience the first signs of physical maturity without having been warned beforehand, and in one case of which I heard a young girl, without the slightest previous hint or warning before, had her first experience of menstruation during a school certificate examination. In the course of my own work of giving psychological analysis and treatment, I have known several cases in which great early distress due to ignorance about sex development set up neurotic conditions lasting for a considerable time, indeed until relief followed the discovery of their origin.

I find that some of my women students think that girls should also be told about homo-sexual tendencies. There would seem to be no harm in informing girls that their 'pashes,' or 'G.P.'s,' as they call them, directed towards some beloved mistress or older girl, are temporary phases, and that they need not be unduly upset about them (though many, no doubt, would refuse to believe such statements). On the other hand, any general discussion about homo-sexuality carries with it the dangers due to suggestion, which has been found to be effective with some people who previously have had no homo-sexual inclinations.

A few of my students think that some adolescents would regard their emotional experiences—even the most unhappy ones—to be so personal and intimate that they would resent their being spoken about.

IV.—INSTABILITY OF INTERESTS.

The instability of emotions and impulses during adolescence is so familiar that I do not propose to say anything further about it; but the instability of the main *interests* of the adolescent is a matter more frequently overlooked.

The noticeable development of certain interests during adolescence is a familiar fact, further illustrated by the table on p. 58. Thus 90 per cent of the men and 79 per cent of the women reported a marked increase in the habit of reading; about 70 per cent of both sexes a great increase in the appreciation of music, and over 60 per cent an increase in the appreciation of nature. (We must recall that these students are more intellectual than the average.¹) In many cases such interests or at least some specific forms of them, are unstable and changeable. The adolescent will often take up some study or hobby for a time with tremendous enthusiasm, whether it be carpentry or the playing of a musical instrument, the keeping of rabbits, or the writing of stories, the study of Esperanto or of Socialism. He will devote all his spare time for weeks to a particular hobby and then drop it suddenly. The practical problem arises as to how far one should attempt to discourage such rapid fluctuations. The view that I would put forward for consideration is that while it is good to encourage a thorough trial of such interests, it is a mistake to try to force an adolescent to remain persistent in his first choice of activities whether in the home or in the club. This even applies, I think, to the following of occupations, especially where there has been no vocational guidance. Rapid shifting from job to job is usually taken to be a bad sign. No doubt it is often a sign of bad choice or undue restlessness. Yet I think a word of caution is needed here. A boy's breaking away from one occupation may in some cases be due to a certain independence, a desire to experiment, and to his having enough initiative to try different kinds of occupations until he is satisfied. Some of our most successful business magnates have been notorious for the way in which they shifted from one job to another in early life until they found their feet. Obviously, however, this is a dangerous doctrine to preach to the majority of adolescents; but in the youth club such experimenting is more possible and, I suggest, desirable.

¹ Professor WHEELER found only 29 per cent of her 'workers' reported an increased appreciation of poetry during adolescence, though 71 per cent of them showed such an increase as regards nature against 54 per cent of the students.—This *Journal*, Vol. I, p. 5.

A further word of caution, however, should be added here, and it applies to the activities of children in the home and school as well as in the club.

There is a constant danger that a child or a youth will be attracted towards some interest or activity partly through its novelty, and partly because it is a favourite activity of those somewhat older than himself. Thus he is apt to take up a hobby or study before he is really mature enough for it. In school (when he may be made to do this by a badly planned curriculum) this may lead to disappointment through lack of progress, leaving perhaps a permanent disgust felt towards the subject. In the case of hobbies and other leisure pursuits it may lead also to similar disappointment and a kind of blasé attitude. The charm and interest has been taken off the once attractive looking pursuit when there has been no real appeal owing to immaturity. Where then the adolescent, especially the younger adolescent, clamours to begin activities for which we are fairly sure he is not ready, efforts should, I think, be made to defer them; though admittedly it is hard to be sure of one's ground here unless one knows the youth intimately, and the adolescent loathes to be told, "You aren't old enough."

V.—INTEREST IN FUTURE VOCATIONS.

One important fact which must be borne in mind in considering the prolongation of full-time education and the nature of the last few years of schooling, is the adolescent's intense interest in his future vocation, especially during the year or two before he is to leave school. It is a commonplace among teachers that the youth will constantly be thinking of 'what use' the subject will be for his life's work. Reference here might be made to the enquiry made by Mr. R. Rallison among 1,659 senior school boys and 1,855 girls as to what questions they would like to have answered. Apart from questions on scientific topics, it was found that questions about vocations were more numerous than those on any other topic among boys; with girls they were surpassed only by questions on games and physical training.¹ I was not surprised at this, because in an enquiry made with the collaboration of Mrs. F. M. Austin some years ago, we found an astonishing amount of ignorance, even among secondary school pupils, as to the nature even of the occupations they had selected.²

This is not the place to discuss whether, say, two years' full-time education, from 14 to 16, is or is not better than one year full-time up to 15, and then continued part-time education up to 18. I only wish to stress two things: (1) that the adolescent's strong interest in his vocation is one factor which should not be ignored in considering the relative values of these two or similar schemes, and (2) that it is an argument in favour of including, even in full-time education, some studies with a bearing, which the youth can himself see, on his possible or probable future calling.

The difficulty here, of course, is to avoid encouraging too early selection of occupation and to avoid being too narrow and specific. Here I might refer to an enquiry by a former research student of mine, Mr. A. D. Hawkins, who followed up the subsequent careers of his pupils in a mixed central school, who had had a special training at the school in shorthand, typewriting, etc. The employment records covered from one to four years after leaving school. Of 80 pupils who had studied shorthand, only 15 per cent had used it after leaving school. Of 80 who had learned book-keeping, only 25 per cent had used it subsequently. Of 53 who had learned typewriting, 30 per cent had used it. Engineering drawing (131 boys) gave the higher figure of 46 per cent, but French, taken partly on vocational grounds the writer thought, gave the low figure of 4 per cent among 181 pupils.³

¹ See R. RALLISON: The interests of senior school children in non-scientific subjects.—*This Journal*, XIII, p. 40, 1943.

² See *The Forum of Education*, Vol. V, 1927.

³ The investigation is described in a thesis presented as part qualification for the degree of M.Sc. (Education), 1933, in the University of Birmingham. An outline of the thesis is given on p. 105 of this number of the *Journal*.

VI.—DELINQUENCY DURING ADOLESCENCE.

(a) *The peak age for boys.*

One of the common ideas not only among the uninstructed but even among those who speak and write about delinquency, is an assumption that the main cause, or one of the main causes of delinquency, is the removing of the child from school at too tender an age and plunging him into the socially dangerous life of the young worker. This idea is somewhat upset (so far as applies to boys) if we study the peak years of the frequency of delinquencies, taking into consideration the relative population for each age. The most thorough recent investigations show that 13 is the age at which the percentage of juvenile delinquents is greatest.¹ When the boys leave school and become wage-earners delinquency actually decreases.

Reference to the figures will also show the surprisingly high numbers for delinquency among boys at the ages of 12, 11 and even 10. In addition, as Burt has shown in *The Young Delinquent*, the adolescent delinquents frequently have records of minor misdemeanours in early childhood. We have also to bear in mind the greater reluctance to bring delinquencies of younger children to official notice.

We cannot then assume that the major cause of juvenile delinquency among boys is the removal from school and the mixing with older men, or the greater freedom due to employment, though for many no doubt it is a precipitating factor.

Among girls the frequency of delinquency is, of course, very much lower than among boys (about one-tenth) and the peak age is appreciably later in adolescence; this is, no doubt, due largely to the fact that such a considerable number of girl delinquencies are connected with sex.²

(b) *Delinquency and membership of youth clubs.*

In several enquiries it has been shown that juvenile delinquents are less frequently members of youth clubs than are their opposites in the control groups. Thus Mr. W. L. Chinn found that among 1,000 juvenile delinquents in Birmingham only 31 per cent belonged to 'recognised social organisations' (including Sunday schools), while among the controls 61 per cent belonged to them.³ (It should be noticed that Chinn included children from the age of 10 up to 15. The figures for children between 14 and 15 were: delinquents, 17 per cent; non-delinquents, 53 per cent.)

One important question, however, has to be borne in mind in considering such results. We do not know how far such differences are due to the fact that it is the 'good,' socially well-adjusted boys who choose to become members of clubs, while those more inclined to delinquency are indifferent to such clubs; or how far the difference is due to the good influence of the clubs upon the boys who do join them. The importance of selection seems undoubted. Here I may quote also the remarkable results found by Carr-Saunders and his colleagues in their recent enquiry. They first of all eliminated from their consideration the 'abnormal' homes ('broken' homes or homes where there was bad discipline, or undue friction between the parents, or where one of the parents was unemployed, or in bad health, or failed to reveal regular and exemplary habits.)

¹ See *Young Offenders*, p. 164, and also p. 120-1.

² Professor BURT comments here: 'Theft is very much more common among girls than the official statistics recognise. Head mistresses and others are far more reluctant to draw official notice to such things in the case of girls of school age. Least of all are they willing for them to come under the notice of the police. Allowing for this I think one might find that there was not much difference between the two sexes so far as one kept to the stock type of crime. I agree that sex delinquencies in girls become very much more frequent during adolescence (I should prefer to say "when they escape from school conditions," since I think it is very much later in secondary school girls than in elementary school girls; but I fancy the rise in sex delinquency would be even later still with boys. However, it seems to me that sexual misdemeanours are on an entirely different footing from the typical police-court offences (theft, etc.).'

³ See W. L. CHINN: "A Brief Survey of nearly one thousand juvenile delinquents."—*This Journal*, Vol. VIII, 1938, p. 82.

Taking only the 'normal' homes they found the following figures¹:

London.		Provincial Cities.	
Delinquents (273 in number)	29 per cent.	Delinquents (264)	28 per cent.
Controls (550 in number)	35 „	Controls (539)	30 „

In other words, where the homes were fairly satisfactory, regular club membership seemed to make very little difference, so far as delinquency was concerned.

This leads us, however, to ask another question. What would the figures be if these investigators had found the figures for the *abnormal* homes? It is precisely among children from homes with bad influence that we should expect clubs to be most valuable. It would also be of great interest to find how the proportion of adolescents joining some club was affected by their coming from 'normal' or 'abnormal' homes. Furthermore, it should be noted that in this enquiry sporting activities were included under 'clubs' (p. 88).

(c) *Attendance at church and evening schools.*

Similar considerations must be borne in mind in examining the records as to *attendance at church* (including Sunday school) or evening schools. The figures for *regular* attendance at church given in *Young Offenders* reveal a difference of some 10 per cent between delinquents and non-delinquents, but it is rather striking that 29 per cent of the London delinquents and 41 per cent of those in the provinces claimed to be regular attendants at church (p. 87). (The figures for controls were: London, 39 per cent; Provinces, 51 per cent.) One wonders how far these reports are reliable. The authors themselves at times admit that their investigators may have found different standards in different parts of the country, and details are not given as to how this evidence was obtained in this or in some other matters. The authors simply claim that, as their investigators were probation officers and officials of educational authorities, their statements on these matters should be fairly reliable.

The figures for *attendance at evening schools* show still greater difference—only 7 per cent for the delinquents, nearly 33 per cent for the controls. Again we cannot, of course, assume that the evening schools had much direct influence on the tendency to delinquency or that compulsory attendance at evening schools would reduce delinquency. The main reason for the difference is again probably that the more serious, ambitious, or obedient pupils *would* attend evening schools, though, no doubt, occupation on some evenings would lessen the temptation to commit petty offences.

(d) *Home discipline and the education of parents.*

As to *home discipline* there was a decided difference between the delinquents and the controls. In less than 60 per cent of the delinquents' homes was the disciplinary attitude satisfactory, whereas the figure for the controls was nearly 90 per cent. We may recall that Burt found that bad discipline in the home gave the highest correlation with delinquency, of all the factors he examined.²

This confirms the view that the problem of delinquency and the training of youth cannot be solved by treating the youth himself in schools or clubs. It must also be tackled in the home itself, and some attempt made to educate parents in at least the most elementary principles of discipline. In interviewing (with school attendance officers) the parents of children who had been persistent absentees from school, I have been appalled at the stupidity of the attempts at discipline—or lack of them—to which parents confessed. I have no exact figures, but my general impression is that at least half and probably more of the difficulties were chiefly due to this: and if we include frequent illnesses in which there was also subsequent over-indulgence and lax discipline, nearly all cases would be covered.

¹ Op. Cit., pp. 88-89.

² See *The Young Delinquent*, p. 96.

(e) *Innate qualities and delinquency.*

In the useful summary of the investigation described in *Young Offenders* the authors point out that many youths seem to survive the worst possible environment, while others succumb even in the most favourable environments, e.g., over 40 per cent of the delinquents came from normal homes where the atmosphere and discipline seemed satisfactory; while nearly 30 per cent of the non-delinquents came from homes without such normal atmosphere. This is described in physiological terms of 'immunity' and 'non-immunity' to injurious outer influences (pp. 152-9).

This is a close parallel with the general conclusion drawn by the present writer¹ as to younger children, namely, that (i) there are some children who will develop sound characters in almost any type of environment; (ii) there are some who will go astray even in the best kind of environment so far as we can discover it, and (iii) there is a large intermediate section whose development will be profoundly affected by their environment.

VII.—THE YOUTH MOVEMENT AND CLUB MEMBERSHIP.

(a) *Some facts from the Birmingham area.*

The recent registration of youths and the recommendations given to them to join some youth organisation should provide valuable material for the study of youth training, particularly if careful follow-up studies are made as to what happens to those who are not already members of some 'approved' organisation. In Birmingham a report made to the Education Committee in September, 1942, revealed that some 47 per cent of the boys aged 16 and 17 were not undertaking any 'approved activity' (which included the junior service organisations), and were not receiving any systematic education. There was little difference between the boys of 16 and those of 17. As to girls, it was found that as many as 73 per cent were not engaged in any 'approved activity.' It should be noticed that the proportion of girls without 'approved activities' was actually greater at 17 years than at 16, the figures for girls of 16 being 69 per cent, and those of 17, 77 per cent.

All young persons who were not attached to some organisation were urged to join one and given an introduction to one of their own choosing. Only 18 per cent of the boys and 29 per cent of the girls were unwilling or unable to achieve introductions to such organisations. The larger organisations were subsequently asked to give their impressions as to the result after these introductions, and the following reports were made:

Boys.

Cadets.—A number reported and joined. In some cases it was necessary to write to boys, but many took no notice. Although a firm believer in the voluntary movement I thought that time and trouble spent were wasted. The best boys join of their own free will. Unless the registration is followed by some form of compulsion the results are not likely to be satisfactory.

Air Training Corps.—Immediately following the interviews the feeling was expressed by officers of most squadrons that had taken part that a large number of boys had shown considerable interest and were potential members. This optimism subsided considerably when it was found that only a small percentage actually applied to join. The actual number joining was small and disappointing.

Navy League.—A number applied for admission, but because of instructions in force they could only enlist a limited number. The boys taken are continuing membership.

Boys' Brigade.—The number of introductions was negligible, and in several instances the person introduced did not continue membership.

Boy Scouts.—We were not interested in the youths of 17. We had a few aged 16. We feel the interviews were worth while.

Boys' and Girls' Union.—The number recruited was very small. Of the twenty who joined no one remained more than three weeks.

¹ *The Difficult Child and the Problem of Discipline*, p. 24.

GIRLS.

Girls' Training Corps.—A very small number recruited as the result of the interviewing, of whom roughly 10 per cent have continued. A number attended only once.

Women's Junior Air Corps.—A large number of girls were introduced and a large number continued. A few girls attended for less than one month and have failed to continue.

Y.W.C.A.—A large number introduced. A gap between those introduced and those actually presented. The majority are definitely continuing membership.

Boys' and Girls' Union.—The same position as for boys except that two remain.

The report concludes: While it would not be right to attempt to make definite deductions from the information available, it seems clear that as a general rule those who were really keen to belong to organisations or to be performing service were actually already linked up at the time of registration. Of the remainder, the fear of compulsion possibly influenced many to agree to join, but when they were satisfied that they were entirely free agents they soon fell away.

In considering these discouraging reports the abnormal war conditions must be borne in mind. They would be likely to stimulate an interest in the service organisations; on the other hand, reports suggested that the long hours many juveniles were working, and the need for help from the girls in the homes, especially where the mothers were working in factories, and the objection of parents to young people being out after black-out, all militate against the joining of organisations.

The question remains whether compulsory membership of some youth organisation is desirable.

(b) *Is compulsory membership desirable?*

The evidence is not conclusive as to the value of club membership, few would doubt, on the mere basis of the general psychology of adolescence, that it is desirable to expand the provision for healthful and cultural leisure pursuits and also of opportunities for useful service.

The question of compulsory membership is, however, a more difficult one. It is agreed, of course, that education must be compulsory even when a child himself would at the time prefer to do without it. If we accept this principle then, so far as the Youth Movement included 'educational' items, compulsion might seem to be justified by the same principle, at least up to corresponding ages, for those not continuing in full-time or part-time education.

The whole matter is complicated by this question of continuation school education.¹ If this were so organised as to provide such education as is thought to be essential, the youth organisations need only cater for additional interests and supplementary courses and recreations. Another complication is the enormous variety of clubs and organisations, some of which can more easily provide educational facilities than others, while some can only cater for recreative activities.

The further question remains as to whether any element of compulsion should be applied even to recreative pursuits, at least when the special war conditions mentioned above have disappeared. Many hold that the whole atmosphere of the youth clubs would be spoilt if any element of compulsion were introduced,² and indeed even compulsory educational courses might tend to create the atmosphere of a 'school,' which many think should be carefully avoided. No doubt the ideal is that the leisure activities should be so attractive as to need no further stimulus. The highly successful Sherbourne Youth Club in Birmingham, though catering for the roughest types of youth, has been able to impose compulsory attendance at some educational activity through the attractive power of its recreations and still expand beyond capacity.³

¹ The co-ordination of youth clubs with part-time continuation schools is admirably sketched by A. E. MORGAN in *Young Citizen*, Chapter 14 (Penguin Books, 1943). See also Professor WHEELER's article in this number of the *Journal*.

² See B. HENRIQUES, *Club Leadership*, p. 7.

³ See *Youth in a City*.—Board of Education Educational Pamphlet, No. 117.

On the other hand, young people need at least some *information* as to what facilities are open to them, and unless there are at least some compulsory attendances to learn of these, many will remain in ignorance except by hearsay as to activities which they might really enjoy. The Birmingham enquiry showed that often a youth ceased to attend some club after only one or two visits. But how many adults enjoy a first night alone in a holiday hotel, or what man is at ease the first day or two in a new club?

I suggest here, for discussion, a principle (which it seems to me might apply generally in education, whether in the upper classes at school, or even at early university stage), namely, that some compulsion—or at least some compulsory choice of several alternatives—may be desirable, but only *for a time* in order to give the youth the opportunity at least of judging whether this particular activity appeals to him, it being made clear to him that this is the only reason for compulsory attendance.

(c) *The problem of compulsory service.*

A further question arises as to whether there should be some compulsory form of service for the community or the State. It is not the concern of a psychological journal to discuss the rights and wrongs of State control, State propaganda, or the question as to how far the State should demand service of its young people. We are only justified in discussing the psychological point of view, which may, however, include the bearing of the age and peculiar psychology of the adolescent. I merely wish to suggest here one point, namely, that we cannot *assume*, as is often done in educational discussions, that, because some service is made compulsory during adolescence, the youth will therefore become accustomed to this and so become less selfish and give service voluntarily later on. This, I suggest, would only happen if in doing such compulsory service the youth discovered a new satisfaction and interest which he realised he would have missed otherwise. It is possible indeed that the compulsion to carry out 'good deeds' may have the opposite to the desired effects. For example, in two large schools I have known the interest in, and contribution to, a charitable or national object (which were regarded as practically compulsory) actually declined in the upper classes of the school, as compared with the middle forms.

We should therefore look askance at such vague phrases as 'training youths to be co-operative or unselfish,' which are so often used in discussions on education, and we should demand much more specific statements as to *how* such 'training' is to be made permanently effective.

Finally, so far as service is appealed for among our young people, it should surely be based on the ground that their help is needed and useful, and not that it is 'good for them.' Indeed, it is only service given on such a basis that is, in fact, likely to be 'good for their souls,' for it is that which will appeal to them most.

VIII.—SUMMARY.

(1) There are considerable variations in the ages in which the characteristic traits of adolescence appear, so that one must not assume that a company of youths of a particular age can be treated entirely as a homogeneous group.

(2) In view of the large proportion of adolescents who experience great dejection, unfamiliar sex developments, and other emotional experiences, during youth, it is suggested that talks to adolescents about some of these experiences may be desirable.

(3) Healthy mental development in young manhood and womanhood is not inconsistent with a strong feeling of inferiority, profound depressions and marked homo-sexual tendencies during adolescence.

(4) Intellectual interests and hobbies in adolescence are also very unstable. Allowance should be made for the wish of many adolescents to experiment in varied activities: but too early an attempt to follow some activity, for which the youth is not sufficiently mature, should be discouraged lest permanent dislikes should be engendered.

(5) The great interest of adolescents in the question of their future careers should be borne in mind in considering the relative values of full-time and part-time education and in planning the curriculum of the last years of senior or secondary schools. But premature specific vocational training may be wasted.

(6) The peak age for delinquency among boys is 13 years, indicating that the main cause of juvenile delinquency is not the removal of boys from school influences to industrial life.

(7) Where the home influences are satisfactory membership of a youth club seems to have little influence on the occurrence of delinquency.

(8) In considering statistics showing the connection between delinquency and membership of clubs, churches, evening schools, etc., one must bear in mind the probability that the better type of youth would be likely to join such institutions.

(9) Several important investigations as to the cause of juvenile delinquency agree in emphasising the supreme importance of satisfactory home discipline.

(10) The frequency of delinquency in normal, satisfactory homes and the frequency of honest and steady living by young people in broken and bad homes, emphasise the importance of innate factors in the causation of delinquency.

(11) In the recent registration of youths in Birmingham it was found that 47 per cent of the boys and 73 per cent of the girls (ages 16 or 17) were not undertaking any 'approved activity.'

(12) Follow-up records of these persons after registration show that a substantial proportion of youths do not join any organisation even after an introduction to one, and the majority of those who do join cease to attend after a few visits; but excessive hours of work and other abnormal war conditions probably account for much of this indifference.

(13) Youth leaders generally seem against making membership of some youth organisation compulsory or introducing anything savouring of school. Experiments show that with the right leaders the clubs can be made sufficiently attractive without compulsion.

(14) If some service for the community is made compulsory it must not be assumed that this will result in improved social and moral standards later.

THE SERVICE OF YOUTH.

By OLIVE A. WHEELER.

I.—*Pre-war wastage of youth in this country.* II.—*Developments characteristic of youth.*
III.—*Attempts to solve the problem of the education of adolescents.* IV.—*The Service of Youth movement.* V.—*A long-term policy for the Service of Youth.*

I.—PRE-WAR WASTAGE OF YOUTH IN THIS COUNTRY.

IN the years immediately before the war the expansion of secondary education in England and Wales was steady, if not spectacular. In 1932 the number of pupils in secondary schools was 438,576, and by 1937 it had risen to 486,676, representing 11.8 per 1,000 of the population. In addition, there were about 41,500 students, over the age of fourteen, given time off from industrial or commercial employments to attend day classes; and there were some vigorous boys and girls who after full-time work tried to carry the burden of attendance at evening classes in technical or commercial institutes. Roughly, for every pupil who passed on to secondary schools or who continued to receive part-time instruction in some other educational institution, there were four whose formal education ceased at the age of fourteen. Thus at the outbreak of war four-fifths of the youth of this country were not having a fair chance of developing their powers and personalities, and there was a serious wastage of the most valuable of all national assets—the creative powers of the next generation.

II.—DEVELOPMENTS CHARACTERISTIC OF YOUTH.

The known facts of human growth point unmistakably to the seriousness of this wastage. It is generally recognised that the period of early youth, from about eleven or twelve to sixteen or seventeen years of age, is usually characterised by rapid growth of body and by profound physiological changes which are often critical in the life-history of the individual. It is, of course, true, as Professor Valentine has pointed out in his article in this number of the *Journal*, that in any unselected group of individuals there will be a wide range of ages at which any particular development occurs, but growth curves obtained by the consideration of large numbers of cases, such as that after Stratz¹ or those collected by Shuttleworth² certainly justify the conclusion that, in general, the years from eleven to fifteen in the case of girls and from twelve to sixteen or seventeen in the case of boys, constitute a springing-up period of rapid physical growth, which in turn is succeeded by a period of slower growth and consolidation.

It is, perhaps, not so well understood that during this same period of early youth there are equally important intellectual developments in the great majority of cases. Yet the answers to questionnaires³ by adolescents themselves suggest that during these years there is frequently a marked increase in artistic, humanistic and scientific interests and, in not a few cases, a real development of political, philosophical and theological thought. Teachers have also repeatedly drawn attention to the increased power of abstract thought and the new interest in reasoning processes which are characteristic of many adolescents. To these haphazard observations there has recently been added, through the use of intelligence tests, much objective evidence concerning the growth of intellectual ability in individuals. The mental growth curves arrived at by Richardson and Stokes⁴ in this country and by Thurstone, Terman and Thorndike⁵ in America agree in indicating the steady growth of problem-solving powers throughout early adolescence and the practical cessation of growth of intelligence at sixteen or seventeen years. Intelligence of course varies from individual to individual, but it tends to reach a maximum distinctive of each individual at about sixteen, or, in the case of highly-gifted individuals, a little later.

¹ See O. A. WHEELER: *Creative Education and the Future*, 1936, Diagram I, p. 94.

² F. K. SHUTTLEWORTH: *The Adolescent Period*, 1938, Figs. 106, 125, etc.

³ O. A. WHEELER: *Youth*, Second Edition, 1933, pp. 35-36.

⁴ C. A. RICHARDSON and C. W. STOKES: "The Growth and Variability of Intelligence."—*British Journal of Psychology*, Monograph, 1933.

⁵ F. K. SHUTTLEWORTH: *The Adolescent Period*, 1938, Fig. 232.

Then, and then only, does the mind of the individual, whatever may be its distinctive quality, begin to run in top gear.

Most significant of all are the emotional changes which are characteristic of early youth. The study of adolescent experiences by questionnaire¹ suggests that there are four chief lines of development which mark the beginning of four major adjustments. There is first a new feeling for self and an increased need for psychological independence, associated with the first great adjustment—the finding of a vocation. Secondly, there is an increased interest in the opposite sex, foreshadowing another adjustment—the finding of a mate. Thirdly, there are new social emotions, preparing the individual to assume the responsibilities of citizenship. Then there are also new or intensified æsthetic and religious emotions, a prelude to the fourth great adjustment—the finding by the individual of a religion, a moral code, or, at least, a working philosophy of life.

The rise of new and powerful emotions, such as that of sex, has the effect of disturbing, and perhaps disintegrating, previously stable sentiments, and there is therefore during this period a general tendency towards waywardness and instability. In a number of cases this shows itself in behaviour problems or even in actual delinquencies. Thus while the 4,454 problem children brought to the Illinois Institute ranged in age from one to seventeen, the peak for both sexes was at age fourteen.² Similarly, more than one-half of the cases of juvenile delinquency investigated in London by Dr. Cyril Burt were between the ages of twelve and fifteen, that is, were in the period of greatest instability.³

It is significant, too, that, according to Professor Burt, the most potent major cause among social conditions leading to juvenile delinquency is defective discipline in the home.⁴ Dr. William Healy's investigation of 1,000 delinquents in Chicago led him to a similar conclusion. In a subsequent study he and Brunner⁵ paid special attention to a number of families with pairs of twins, or siblings near one another in age, one of whom was delinquent and the other not. It was discovered that in 92 per cent of these delinquents there was clear evidence of emotional disturbance, such as resentment of the father or mother, or a feeling of insecurity or inferiority. These facts suggest that improvement in the standards of home life and discipline, based on increased understanding of children by their parents, is more likely to lead to a reduction of delinquency than any other single advance. At no period in the life histories of their children are the sympathy and understanding of parents more needed than during the period of early youth, characterised both by emotional instability and by a growing need for psychological independence.

The third and last springing-up period appears then to be critical in the life-histories of individuals. In turn, it is followed by the third period of consolidation, in which physical growth proceeds more slowly, the new emotions organise themselves into sentiments and the four major adjustments of life are progressively effected.

III.—ATTEMPTS TO SOLVE THE PROBLEM OF THE EDUCATION OF ADOLESCENTS.

The need for continued guidance and training during a period of such marked instability was so clearly recognised immediately after the last war that, in the Fisher Act of 1918, provision was made for the setting-up of day continuation schools and for the compulsory part-time attendance at them of all boys and girls between the ages of fourteen and eighteen, who had not proceeded to secondary schools. Serious difficulties, however, arose in implementing this provision, largely because some employers objected, perhaps legitimately, to the dislocation of business or industry that resulted from their having to release young workers to attend day continuation schools during working hours.

Educational opinion therefore veered towards the alternative solution of the problem, namely, the raising of the school leaving age to sixteen and the provision of full-time continued education in a variety of forms to suit the variety of needs of adolescents.

¹ O. A. WHEELER: *Youth*, 1933, pp. 39-45; and "Variations in the Emotional Development of Normal Adolescents."—*British Journal of Educational Psychology*, Vol. I, p. 2.

² ACKERSON, LUTON: *Children's Behaviour Problems*, 1931.

³ C. BURT: *The Young Delinquent*, 1925, p. 18.

⁴ *Ibid.*, p. 606.

⁵ W. HEALY and A. F. BRUNNER: *New Light on Delinquency*, 1936.

The Hadow Scheme for the reorganisation of education was a move in this direction. It made possible many interesting experiments in more practical and less academic forms of continued education (in senior and central schools) and thus prepared the way for the greater variety of provision of secondary education which would become necessary before the needs of the majority of adolescents could be met. Another step was actually taken in this direction in 1936 by the passing of an Act raising the school leaving age to fifteen, with "beneficial exemptions," but the outbreak of war resulted in the indefinite postponement of the date of its operation.

Meanwhile, voluntary youth organisations, such as the Scouts, Guides, the Urdd, Boys' and Girls' Clubs, Church Lads' Brigade and Girls' Friendly Society, had developed, and in peace time had done very useful work in training and guiding boys and girls by encouraging them in the right use of their leisure. When therefore war conditions—the black-out, bombing, evacuation, the early entrance of boys and girls into industry and economic independence, and the absence of fathers on active service and of mothers on war work, increased the risks of disaster to the youth of this country, as was clearly evidenced, for example, by the increase in juvenile delinquency, the Government introduced a war emergency scheme which has come to be known as the "Service of Youth" Movement.

IV.—THE SERVICE OF YOUTH MOVEMENT.

In its Circulars 1486 and 1516, issued in November, 1939, and June, 1940, respectively, the Board of Education recommended that local education authorities should set up Youth Committees, on which the voluntary youth organisations should be represented, to survey, encourage, and co-ordinate youth services in their areas. It also announced that grants made or expenses incurred by local education authorities in respect of such services would be eligible for 50 per cent grant from the Board of Education. In a later Circular, No. 1543, entitled "Youth Service Corps," and issued in March, 1941, there was clear evidence of a change of emphasis from the Service of Youth to Service by Youth. Finally, in Circular 1577 (December, 1941), entitled "Registration of Youth," local education authorities, through their Youth Committees, were given the task of arranging for the interviewing of boys and girls as they became liable for registration by the Ministry of Labour and National Service. The interviewers were to advise those who came before them to join some youth organisation, if they were not already members, and in the present war emergency were to encourage boys and girls to undertake some form of pre-service training.

Many pre-service organisations, such as Air Training, Army and Sea Cadets came into existence and, as was to be expected, with the continuance of the war and the attraction of uniform, a high proportion of boys joined them in preference to, or in addition to, other youth organisations. Thus, for example, in Monmouthshire, of the boys registering in 1942 and 1943, 34 per cent joined pre-service training units and 15.5 per cent other youth organisations, while 14 per cent remained at school. Among the girls, only 23.5 per cent joined youth organisations of any kind, while 12.5 per cent remained at school.¹

The comparative failure of the Service of Youth Movement to attract the majority of those whose formal education ended at fourteen has been widely noticed and has already led to considerable controversy concerning the advisability of introducing the principle of compulsory membership of youth organisations. This suggestion of compulsion in regard to the use of leisure raises the much larger question of the purpose and ideology of the Service of Youth Movement and of its consequent suitability to be a permanent and essential element in a democratic system of education.

V.—A LONG-TERM POLICY FOR THE SERVICE OF YOUTH.

As a war emergency this scheme for the Service of Youth may not be open to serious objection, but as a long-term policy it certainly requires careful and critical consideration. It has, for example, been criticised by experienced workers in the older voluntary youth organisations who fear that central support and control may rob their movements of their

¹ Figures for Birmingham are given by VALENTINE in this number of the *Journal*, p. 65.

distinctive characteristics and may discourage their members from making a real effort, as they have done in the past, to provide for their own leisure and to find ways and means of supporting and developing their own organisations.

The wisdom of giving support from public funds to voluntary youth organisations before the minimum basic State provision for the education of youth had been secured has also been questioned by progressive educationists. Even if all boys and girls who leave school at fourteen were compelled to become members of youth organisations, the extended provision for recreation and for physical and social training, under the guidance of well-meaning amateurs, would not really meet their basic needs during one of the most critical growing periods of their lives. The psychological facts already outlined point unmistakably to the necessity for many-sided education during youth, for the training of the intellect as well as of the body, for technical training and vocational guidance, and for sex, moral and religious education, as well as for social training. The critical nature of the period of youth suggests also the necessity for professionally trained leaders, who will be able to give guidance not only to the adolescents but also to the parents, whose understanding of their children is probably the most important single factor in preventing maladjustments. Secondary education for all, though in a greater variety of forms and with more recognition of the need for creative work and self-government than has been usual in the past, should undoubtedly be the foundation of any permanent system for the service of youth. The development of recreational centres and youth clubs, valuable and important as these may prove to be, should be ancillary to, and not a substitute for, this basic provision.

As a supplement to secondary, central and senior school education at least to the age of sixteen, membership of a youth organisation may prove useful, especially if there are within it opportunities for the practice of self-government and for the continuation of education beyond the school leaving age. In the planning of post-war education we must, however, avoid the mistake of supposing that the development of war emergency youth services has diminished the need for the raising of the school leaving age, the reorganisation and development of new forms of adolescent education, and the adequate provision for vocational guidance within the schools.

The origin of the war emergency service of youth scheme and particularly its connection with the earlier "Keep Fit" Movement, was perhaps unfortunate. But leaving all questions of origin aside, it is obvious from internal evidence that the purpose of the scheme remains confused, compared, for example, with that of the Hitler Youth Movement.

In *Ziemer's Education for Death* there is a penetrating analysis of the German Youth Movement, which clearly shows that, after it became centralised and membership in it became compulsory, its main purpose was to exploit youth in order to produce an invincible war machine. The leaders set out to encourage physical fitness, toughness and blind obedience to superiors. To this end, they dressed the members in uniforms, drilled and subjected them to a discipline of fear, and made rules for the use of symbols and customs, calculated to encourage emotional solidarity. They subjected them to the persistent influence of propaganda, such as that concerning racial superiority, and taught them to despise the intellect and critical thinking, and to repudiate the Christian virtues of mercy and kindness. The youths of Germany were thus separated from their families and were trained and regimented for service to the State.

Such a movement is consistent with and, in a real sense, reflects Fascism. But since the value of the individual is the corner-stone of the democratic view of life, it would hardly seem to be appropriate training for citizenship in a democracy, where each individual is expected to be able to exercise his own judgment on important questions. In addition to learning how to serve his fellows he has to be educated to think critically and without prejudice. In his case, training in straight thinking during the period of adolescence, when his intelligence matures, is an essential part of education for citizenship.

It is, of course, true that many of the voluntary organisations co-operating in the Service of Youth scheme were designed to give training in the right use of leisure and to provide the opportunities for adventure, independence, co-operation, service and religious experience which youth really needs. Voluntary membership within them is therefore

entirely consistent with democratic ideals. But the gradual change of emphasis from *Service of Youth* to *Service by Youth* indicate, for example, by a careful comparison of the first two circulars of the Board of Education on the subject,¹ in which there is no mention of pre-service training, and the later statements of policy,² in which the services as well as the voluntary youth organisations appear to be partners in the training of youth, cannot fail to raise the question in the minds of true democrats "How far has the scheme, if only because of its origin and development during a period of war, been infected by an ideology inconsistent with democratic ideals?"

The development of Army, Navy and Air Force pre-service training units for boys, the gradual lowering of the age of admission to the Army and Sea Cadets, the formation of the Girls' Training Corps, and the threat of compulsion in regard to membership of a youth organisation, undoubtedly have a totalitarian flavour. If in this country the right of conscientious objection to war service has to be conceded to adults, it would only be consistent to hold that there should be no forcing of immature judgment during a period of marked instability, and no indirect violation of the principle of individual freedom. It should be remembered that the recognition of the right of private judgment is based on the view that there is a moral law within each individual, higher than the laws of State. One of the major adjustments of youth is the discovery of this moral law; and the effect of early pre-service training on this development has not yet been sufficiently considered by psychologists and sociologists. One point, however, is clear, namely, that the attainment of the objective of the Allied Nations described in the eighth clause of the Atlantic Charter as "the abandonment of the use of force and the outlawry of war" will necessitate a new alignment of the Service of Youth Movement or, at least, of that part of it which is at present concerned with preparation for war service and is aided and partially controlled by war Ministries.

It is perhaps necessary to draw a clear distinction between *education* (training for the free and many-sided development of the individual) and training for *exploitation*—that is, for the use of the individual by other interests. In a democracy, where the value of the individual and his right to creative growth are accepted basic principles, there should be compulsory *education*, but no training for *exploitation* during infancy, childhood, and early youth. Ideally, no one should be denied full opportunities for many-sided development up to the end of the third period of rapid growth, either by the omissions, or the commissions, of the State; and even up to eighteen, individuals should be regarded primarily as persons to be educated, rather than as wage-earners or servants of the State. The kind of education given should vary according to individual interests and abilities, but there should be a general principle governing the varieties of provision, namely, that in youth each individual should be prepared for the four major adjustments of the growing-up process. There will be need for vocational guidance and training, and in some cases it may be advisable for there to be part-time employment or apprenticeship. But there will also be need for sex education, for education for citizenship and for moral and religious education. The methods of learning employed will need to give scope to the spirit of adventure and creativeness in youth, as well as to give knowledge of the real world and that training in critical thinking which is so essential for citizens of a democracy. The kind of discipline used will also need to be appropriate to the period of youth when there is, or should be, a gradual transition from a morality of constraint and obedience to a morality of insight and co-operation.

When there is adequate provision in this country for full-time or part-time compulsory education up to eighteen, there will still be a place for the voluntary youth organisation as a supplement to the more formal provision. The problem will, however, tend to shift in respect of age range, and after a period of transition will probably become mainly one of bridging the gap between compulsory adolescent education and voluntary adult education.

¹ *The Service of Youth*, November, 1939; and *The Challenge of Youth*, June, 1940.—H.M. Stationery Office.

² *Youth Service Corps*, March, 1941; *Registration of Youth*, December, 1941; and *Training and Service for Girls*, March, 1942.—H.M. Stationery Office.

SOCIO-ECONOMIC LEVEL AND TEST PERFORMANCE.

By C. M. FLEMING.

I.—*Methods of assessing social status.* II.—*Treatment of results:* (a) *Measures of central tendency;* (b) *Correlations;* (c) *Measures of dispersion.* III.—*Summary of recent conclusions.* IV.—*Material and methods of present enquiry:* A.—*Tests of intelligence and of silent reading:* (1) *Comparison of pupils according to schools;* (2) *Comparison of pupils according to size of house;* B.—*Tests of ability in arithmetic.* V.—*Summary of results and conclusions.*

I.—METHODS OF ASSESSING SOCIAL STATUS.

NINETEENTH-century evidence on this topic is to be found in discussions on heredity such as those of Galton, Dugdale, Woods and Goddard. At a slightly later date more objective evidence became available,¹ and the development of standardised testing in the last twenty-five years has been accompanied by persistent attempts to assess, among other attributes, the measurable ability of children in relation to the social position of their homes.

A variety of methods has been adopted in the attempt to assess relative socio-economic status. In some cases reliance was placed upon the opinion of representative townsmen or of the head master and attendance officer of a school. Other workers used answers to questionnaires. Some secured information as to taxes, the possession of a telephone, the rent or size of the house, or the occupation of the father. Others utilised weighted reports based on material possessions and the appearance of the home, while still others used the school² as a measure of social grading—justifying their procedure by the observed fact that considerable homogeneity of social type is a characteristic of most schools.³

II.—TREATMENT OF RESULTS.

Three main methods have been employed in the treatment of results:

- (a) A mere comparison of group averages;
- (b) Some record of estimated correlations;
- (c) Some discussion of measures of dispersion.

(a) *Comparison of group averages.*—It is to be regretted that in too many instances very sweeping generalisations⁴ have been based on findings obtained by this method and that many investigators have failed to record the standard deviations or the sizes of their distributions.

When group averages are considered there is almost unanimous evidence of a sequence of differences in intelligence between children from homes of one occupational level and the next—the children of the professional classes ranking highest and those of day-

¹ PEARSON, K.: "On the Laws of Inheritance in Man."—*Biom.*, III, 1904, pp. 131-190; cf. Contemporary Discussions by BURR and others in *Eugenics Review*; and BURR, C.: "Experimental Tests of General Intelligence."—*B.J. of Psych.*, III, 1909, pp. 94-177.

² Cf. BURR, C.: *Mental and Scholastic Tests.*—London, 1921; THOMSON, G. H.: "The Northumberland Mental Tests."—*B.J. of Psych.*, XII, 1921, pp. 201-222.

³ It is to be noted that, whichever measure of social status is employed, there is no reason to expect a number of completely discrete and discontinuous levels. Differences of opinion as to the correct assignment of a large variety of actual occupations provide a reminder that human society is more nearly arranged in a continuous series than segregated in sets of separated groups.

⁴ To judge from the wording of certain discussions, it seems, for example, to have been assumed that distinctions based on measures of central tendency apply to the whole of each group, that there are class differences in native intelligence and "segregation of abilities among adults along socio-economic lines" (GOODENOUGH, F. L.: "The Measurement of Mental Growth" in *A Handbook of Child Psychology.*—Clark University Press, 1933, pp. 303-328), and it has been feared that there will be a decline in the average intelligence of most occupations if 'more complex' occupations are in the future followed by the children of parents of 'lower' occupations (CATTELL, R. B.: "Occupational Norms of Intelligence."—*B.J. of Psych.*, XXV, 1934, pp. 1-28).

labourers lowest. This has been reported not only in America (Haggerty and Nash,¹ Collins,² Hildreth³) but in England (Duff and Thomson,⁴ MacDonald,⁵ Jones and Carr-Saunders,⁶ Gray and Moshinsky⁷), and not only with pupils of school age but with pre-school children (Goodenough and Shapiro⁸) and with university students (Haught⁹) and adults (Yoakum and Yerkes,¹⁰ Cattell¹¹). In many instances, however, it is not possible to determine from the information supplied whether the apparent differences between one level and the next are statistically significant.

Slight variations in order of intelligence quotient for different age-groups are reported by Terman and Merrill,¹² but the general form of the sequence is maintained, and its range (except in the study by Hildreth, where it extends from 113 to 75.7 I.Q., and in that by Cattell, whose test is not comparable) is one of about twenty points of I.Q.—from an average of about 116 for children of higher professional groups to one of about 96 for those of unskilled labourers.

A similar finding is reported by those who classify occupational and social groups in slightly different ways (Terman,¹³ Stoke cited by Freeman,¹⁴ Lawrence¹⁵). It seems irrespective of the exact type of classification and the particular test. The average score of pupils from more favoured homes is reported to be higher than that of pupils from lower socio-economic levels, and the differences are greatest between groups most widely separated.

Comparable studies of achievement in school subjects are fewer, but somewhat similar findings have been obtained from attempts to compare the performance of different schools and social groups in isolated scholastic activities (Belford,¹⁶ Report on Qualifying Examination,¹⁷ Northway,¹⁸ Maxwell¹⁹), in general school standing (Winch,^{20 21}

¹ HAGGERTY, M. E., and NASH, H. B.: "The Mental Capacity of Children and Paternal Occupation."—*J. of Educ. Psych.*, XV, 1942, pp. 559-572.

² COLLINS, J. E.: "The Intelligence of School Children and Paternal Occupation."—*J. of Educ. Res.*, 17, 1928, pp. 157-169.

³ HILDRETH, G.: "Occupational Status and Intelligence."—*Personnel J.*, XIII, 1934, pp. 153-157.

⁴ DUFF, J. F., and THOMSON, G. H.: "The Social and Geographical Distribution of Intelligence in Northumberland."—*B.J. of Psych.*, XIV, 1923, pp. 192-198.

⁵ MACDONALD, H.: "The Social Distribution of Intelligence in the Isle of Wight."—*B.J. of Psych.*, XVI, 1925, pp. 123-129.

⁶ JONES, D. C., and CARR-SAUNDERS, A. M.: "The Relation between Intelligence and Social Status among Orphan Children."—*B.J. of Psych.*, XVII, 1927, pp. 343-364.

⁷ GRAY, J. L., and MOSHINSKY, P.: "Ability and Educational Opportunity in Relation to Parental Occupation."—*Sociol. Rev.*, 27, 1935, pp. 281-329.

⁸ GOODENOUGH, F. L., and SHAPIRO, G.: "The Performance of Pre-School Children of Different Social Groups on the Kuhlman-Binet Tests."—*J. of Educ. Res.*, 18, 1928, pp. 356-362.

⁹ HAUGHT, B. F.: "The Relation of Intelligence of College Freshmen to Parental Occupation."—*Psych. Monogr.*, 50, 1938, pp. 203-210.

¹⁰ YOAKUM, C. S., and YERKES, R. M.: *Mental Tests in the American Army*.—New York, 1920.

¹¹ CATTELL, R. B.: loc. cit.

¹² TERMAN, L. M., and MERRILL, M. A.: *Measuring Intelligence*.—London: Harrap, 1937, p. 48, e.g., for ages ten to fourteen the sequence in mean I.Q.'s is 117.5, 112.2, 107.4, 92.4, 103.4, 100.6, 97.2; while for ages fifteen to eighteen for the same categories I to VII, it is 116.4, 116.7, 109.6, 94.3, 106.7, 96.2, 97.6.

¹³ TERMAN, L. M.: *The Standard Revision and Extension of the Binet-Simon Scale*.—Baltimore, 1917.

¹⁴ FREEMAN, F. S.: *Individual Differences*.—London, 1934.

¹⁵ LAWRENCE, E. M.: "An Investigation into the Relation between Intelligence and Inheritance."—*B.J. of Psych. Supplement*, 1931.

¹⁶ BELFORD, A. J.: "Arithmetic Tests in Qualifying Classes."—*Scottish Educ. J.*, 27th November, 1936.

¹⁷ Report on Qualifying Examination.—Glasgow Education Committee, 1940.

¹⁸ NORTHWAY, M. L.: "The Influence of Age and Social Group on Children's Remembering."—*B.J. of Psych.*, XXVII, 1936, pp. 11-29.

¹⁹ MAXWELL, R. S.: "Remembering in Different Social Groups."—*B.J. of Psych.*, XXVII, 1936, pp. 30-40.

²⁰ WINCH, W. H.: "Social Class and Mental Proficiency in Elementary School Children."—*J. Exper. Ped.*, I, 1911-1912, pp. 9-11 and pp. 118-128.

²¹ WINCH, W. H.: "Christian and Jewish Children in East End Elementary Schools: Some Comparative Mental Characteristics in Relation to Race and Social Class."—*B.J. of Psych.*, XX, 1930, pp. 261-273.

Kornhauser¹), or according to the results of the Stanford Achievement Tests (Courtis,² Scott³), or the Burt Achievement Tests.⁴

(b) *Correlations with social status.*—In most instances where correlations are reported between intelligence test scores and level of parental occupation they are positive but not high: Duff and Thomson (Pearson's first contingency method $+ .28$), MacDonald (co-efficient of mean square contingency $+ .26$), Stoke cited by Freeman ($+ .30$), Lawrence (Pearson's η $+ .21$ for girls and $+ .26$ for boys), Gray and Moshinsky ($+ .25$), Byrns and Henmon⁵ ($+ .18$), Terman and Merrill ($+ .40$).

Similar figures are given for correspondence between intelligence test performance and rating of the home according to modifications of the Chapman-Sims scoring for household possessions: Chapman and Wiggins⁶ ($r + .32$), Heilman⁷ ($r + .40$, corrected for attenuation and with age partialled out), Chauncey⁸ ($r + .20$ and $+ .19$ for pupils at two different school stages), and between intelligence and number of rooms, Dawson⁹ ($+ .19$), or room space, O'Hanlon¹⁰ ($+ .15$).

Where higher correlations are reported, there is either no record of the method of calculation employed, or the correlations are based on group averages with a consequent exaggeration of the relationship. Dexter, cited by Burks¹¹ (rank-order correlation, $+ .74 + .79$), Cattell¹² (rank correlation, $+ .89 + .92$), or on a composite intelligence-test score. Barr, cited by Burks ($r + .50$).

Slightly higher correlation coefficients are also reported where the social criterion is of a much more comprehensive type—taking account of the cultural and educational level of the home to a much greater degree than is possible in a classification according to mere socio-economic levels. Fukuda¹³ ($+ .53$), Freeman et al.¹⁴ ($r + .48$), Burks¹⁵ ($r + .42$), Van Alstyne¹⁶ (biserial $r + .59$), Leahy¹⁷ ($+ .51$).

¹ KORNHAUSER, A. W.: "The Economic Standing of Parents and the Intelligence of their Children."—*J. of Educ. Psych.*, IX, 1918, pp. 159-164.

² COURTIS, S. A.: "The Influence of Certain Social Factors upon Scores in the Stanford Achievement Tests."—*J. of Educ. Res.*, 13, 1926, pp. 311-324; 14, 1926, pp. 33-42.

³ SCOTT, A. W.: "A Comparative Study of Responses of Children of Different Nationalities and Environments on Intelligence and Achievement Tests."—*Teachers' College*, 1929, No. 367.

⁴ BURT, C.: loc. cit., 1921.

⁵ BYRNS, R., and HENMON, V. A. C.: "Parental Occupation and Mental Ability."—*J. of Educ. Psych.*, XXVII, 1936, pp. 284-291.

⁶ CHAPMAN, J. C., and WIGGINS, D. M.: "The Relation of Family Size to Intelligence of Offspring and Socio-Economic Status of Family."—*Ped. Sem.*, 32, 1925, pp. 414-421.

⁷ HEILMAN, J. D.: "The Relative Influence upon Educational Achievement of some Hereditary and Environmental Factors."—*Twenty-seventh Year Book National Society for the Study of Education*, II, 1928, pp. 35-65.

⁸ CHAUNCEY, M. R.: "The Relation of the Home Factor to Achievement and Intelligence Test Scores."—*J. of Educ. Res.*, 20, 1929, pp. 88-90.

⁹ DAWSON, S.: "Environmental Influence on Heredity."—*B.J. of Psych.*, XXVII, 1936, pp. 129-134.

¹⁰ O'HANLON, G. S. A.: "An Investigation into the Relationship between Fertility and Intelligence."—*B.J. of Educ. Psych.*, X, 1940, pp. 196-211.

¹¹ BURKS, B. S.: "A Summary of Literature on the Determiners of the Intelligence Quotient and the Educational Quotient."—*Twenty-seventh Year Book National Society*, II, 1928, pp. 248-350.

¹² CATTELL, R. B.: "Intelligence, Fertility and Socio-Economic Factors."—*Eugenics Review*, XXIX, 1937, pp. 171-179.

¹³ FUKUDA, T.: "A Survey of the Intelligence and Environment of School Children."—*Amer. J. of Psych.*, 36, 1925, pp. 124-139.

¹⁴ FREEMAN, F. N., et al.: "The Influence of the Environment on the Intelligence, School Achievement and Conduct of Foster Children."—*Twenty-seventh Year Book, National Society*, I, 1928, pp. 102-217.

¹⁵ BURKS, B. S.: "The Relative Influence of Nature and Nurture upon Mental Development."—*Twenty-seventh Year Book, National Society*, I, 1928, pp. 219-316.

¹⁶ VAN ALSTYNE, D.: "The Environment of Three-year Old Children."—*Teachers' College*, 1929, No. 366.

¹⁷ LEAHY, A. M.: "Nature, Nurture, and Intelligence."—*Genetic Psych. Monogr.*, 1935, pp. 235-308.

In connection with performance in tests other than those of what is commonly called intelligence, there have been fewer records of attempts to estimate correlations with social status. Heilman ($r + .39$, corrected for attenuation and with age partialled out), Freeman et al. ($+ .34$), Chauncey ($r + .30$ and $+ .35$), Winch (correlations for different age groups from $+ .65$ to $- .26$).

(c) *Estimates based on measures of dispersion.*—The lowness of the correlations reported above serves to suggest that there is far from being a complete correspondence between social or occupational level and achievement in intelligence or scholastic tests, and the reminders of earlier investigators like Duff and Thomson, MacDonald, Stoke (cited by Freeman) and Burks¹ that there is considerable overlapping between one level and the next have more recently been reiterated by workers both in England—Russell,² Lawrence, Gray and Moshinsky—in America—Hildreth, Byrns and Henmon—and in New Zealand—McQueen et al.³—and Canada—Webster.⁴

Although the average of children's intelligence does, on the whole, rise with the occupational level of their parents in a fashion roughly corresponding to the average increase in intelligence of individuals following the occupations, there is reason to believe that a large number of children of superior intelligence come from homes of the middle social and economic groups. It is to be noted that such findings are quite in line with recent evidence on inter-familial relationships derived from the testing of children of parents whose I.Q.'s are known. (Cf. Woodall cited by Freeman,⁵ Burt.⁶ See also Stoddard and Wellman⁷ and Speer.⁸) The offspring of defective parents do not all prove to be defective, and parent-child correlations in intelligence, while positive, are usually in the region of $+ .50$, which cannot be called high. (Cf. Jones,⁹ Leahy,¹⁰ Conrad and Jones.¹¹)

For the sake of brevity no consideration is given to other relevant topics such as recent evidence on the inconstancy of the I.Q. and its relationship to the assumptions implicit in the standardisation of most tests, the effect of prolonged residence in a poor environment (Cf. Neff¹² for a recent summary) or the changes which seem to follow transference to better circumstances (Cf. Dawson,¹³ *Thirty-ninth Year Book of the National Society*, *passim*, Glasgow Report.¹⁴). Discussion of possible relationships between test performance and order of birth or size of family is also deliberately omitted. (Cf. Bradford.¹⁵)

III.—SUMMARY OF RECENT CONCLUSIONS.

(1) When average scores are compared there is evidence of differences between pupils of the same age in various social groups—the more prosperous on the whole scoring more highly, and the differences being most distinct between sections most widely separated by economic conditions.

¹ BURKS, B. S.: *loc. cit.*

² RUSSELL, J. B.: "The Measurement of Intelligence in a Rural Area."—*B.J. of Psych.*, XX, 1929, pp. 274-295.

³ MCQUEEN, H., et al.: *The Background of Guidance*.—New Zealand Council of Educ. Res., 1941.

⁴ WEBSTER, E. C.: *Guidance for the High School Pupil*.—McGill, 1939.

⁵ FREEMAN, F. S.: *loc. cit.*

⁶ BURT, C.: *The Subnormal Mind*.—Oxford University Press, 1937.

⁷ STODDARD, G. D., and WELLMAN, B. L.: "Environment and the I.Q."—*Thirty-ninth Year Book, National Society*, I, 1940, pp. 405-442.

⁸ SPEER, G. S.: "The Mental Development of Children of Feeble-minded and Normal Mothers."—*Thirty-ninth Year Book, National Society*, II, 1940, pp. 309-314.

⁹ JONES, H. E.: "A First Study of Parent-Child Resemblance."—*Twenty-seventh Year Book, National Society*, I, 1928, pp. 61-72.

¹⁰ LEAHY, A. M.: *loc. cit.*

¹¹ CONRAD, H. S., and JONES, H. E.: "A Second Study of Familial Resemblance in Intelligence."—*Thirty-ninth Year Book, National Society*, II, 1940, pp. 97-141.

¹² NEFF, W. S.: "Socio-Economic Status and Intelligence."—*Psych. Bull.*, December, 1938, 35, 10, pp. 727-757.

¹³ DAWSON: *loc. cit.*

¹⁴ Glasgow Report: *loc. cit.*

¹⁵ BRADFORD, E. J. G.: "The Relation of Intelligence to Varying Birth Rate in Different Social Grades."—*B.J. Educ. Psych.*, VII, 1937, pp. 229-246.

(2) This conclusion holds good whether prosperity is assessed according to the type of school attended, according to the number of apartments in the home, or according to information obtained by social workers in terms of various types of socio-economic scales.

(3) From the information supplied in most reports it is not, however, possible to estimate the degree of significance of these apparent differences between one level and the next. Nor is it possible to judge the relative sizes of the sub-groups represented.

(4) When assessment is made of the degree of relationship between socio-economic level and test-performances, the correlation coefficients are positive, and they progressively increase in size with the complexity of the criterion of socio-economic level. They are lowest in relation to estimates based on type of school, mere parental occupation, material possessions or size of house, and highest where the social criterion takes account of educational and cultural level as evidenced by details of the equipment and the habitual behaviour of the homes.

(5) Where analysis is made of the distribution of test results (and the relative sizes of the sub-groups) it is reported that there is a wide range of ability in every class in the community, that the differences within every group are greater than the differences between the averages of groups, and that while a relatively larger number of children of intellectual ability may be found in homes ranked as superior by a socio-economic criterion, an absolutely larger number can be discovered among pupils below this very highest social level.

IV.—COMPARABLE EVIDENCE EXTRACTED FROM RECENT TESTING.

Of some interest in this connection are the following findings extracted from testing undertaken for a different purpose. These are given with full awareness of their limitations. It is to be noted, for example, that there is some proportionate inequality in the sizes of the sub-groups, that certain groups are very small—though no smaller than in many of the reports frequently cited—and that the criteria employed (while frequently used in other surveys) are of the type which, like parental occupation, are known to correspond least highly with differences in intelligence or achievement. Information is, however, available as to the relative sizes of the sub-groups represented and the conclusions which may be drawn correspond sufficiently closely to those given above.

In response to certain problems raised by work in an Educational Clinic, representative samples of about 4,000 and 1,800 pupils attending schools in Glasgow had been tested with group tests of intelligence, silent reading, and arithmetic. The test material had been standardised in the west of Scotland. It consisted of earlier forms of the tests of mental ability and reading ability later published as the Kelvin Tests, along with the Kelvin Test of Arithmetic.¹ From the results so obtained the figures for 2,138 and 1,324 pupils aged eight to twelve have been abstracted, and these are here considered from the point of view of differences in socio-economic level.²

A.—Tests of intelligence and of silent reading ability.

Two methods of assessing the relative prosperity of the pupils were used. By the first, the schools were grouped according to the percentage of pupils who, in the winter of two successive years, received public relief in the form of food or clothing. Five grades of prosperity were recognised corresponding to the following percentages of necessitous pupils: 0; 0.01 to 1; 1.01 to 2; 2.01 to 3; 3.01 to 8. For convenience, these were labelled A, B, C, D, E. (The distinctiveness of this classification was confirmed by field

¹ Details of the construction, weighting, validity and reliability of these tests are given in *A Survey of Reading Ability*.—C. M. FLEMING: Ph.D. Thesis, Glasgow University Library, 1930.

² It is to be noted that a large Scottish city is a peculiarly suitable field for such a study since inequalities in the education and training of teachers are relatively slight as compared with those which invalidate comparisons in England between the achievement of pupils from homes of greater or less prosperity.

work in the districts concerned over a period of ten years. Group A, for example, included the few fee-paying and private schools in the city, while Group E consisted of schools in the poorest districts whose pupils came from single apartment houses. (Cf. Bedford, loc. cit.; Glasgow Education Committee Report, loc. cit.) Parental occupations of children in Group A schools were of the professional and managerial types, while those of children in schools in Groups D and E were of the type of unskilled labourers of greater and lesser degrees of prosperity.)

By the second method the pupils were considered individually according to the number of apartments (excluding bathrooms) in the homes from which they came. The figures available were in this case smaller, since certain parents protested against the asking of such questions, and the investigation had to be curtailed. (More offensive still in that Scottish city would have been a direct enquiry as to the family income or parental occupation.)

TABLE I.—READING TEST: DISTRIBUTIONS OF SCORES.

Age.	8			9			10			11			12		
Social Level of School.	N	m	σ	N	m	σ	N	m	σ	N	m	σ	N	m	σ
A	17	7.18	4.43	27	7.0	4.54	22	16.31	3.19	78	16.85	3.29	101	17.19	2.39
B	219	8.69	4.84	196	10.44	4.55	121	12.82	4.63	160	14.95	4.02	105	15.71	3.55
C	79	6.29	3.79	113	12.20	3.75	155	13.69	4.26	120	14.29	3.77	85	16.39	3.38
D	84	8.21	3.67	80	9.29	4.24	41	12.19	3.75	64	14.22	4.26	71	14.69	3.36
E	31	6.90	3.35	69	7.69	3.72	27	10.00	3.92	43	14.02	3.27	30	14.59	2.54

TABLE II.—INTELLIGENCE TEST: DISTRIBUTIONS OF SCORES.

Age.	8			9			10			11			12		
Social Level of School.	N	m	σ	N	m	σ	N	m	σ	N	m	σ	N	m	σ
A	17	46.35	13.76	27	56.0	12.73	22	81.35	16.79	78	84.31	14.68	101	89.90	15.11
B	219	40.74	15.33	196	48.35	16.88	121	59.04	19.53	160	69.19	19.66	105	78.49	19.66
C	79	28.49	16.57	113	53.22	17.26	155	59.45	15.97	120	63.62	18.62	85	76.11	17.22
D	84	31.43	13.73	80	41.80	17.03	41	53.83	16.15	64	64.33	19.72	71	68.01	15.59
E	31	37.09	13.59	69	33.21	11.40	27	42.67	20.76	43	56.95	18.72	30	67.9	15.57

Examination of the averages, distributions and standard errors obtainable from Tables I and II indicates significant differences in intelligence—test scores between groups of social levels A and B at ages nine, ten, eleven, twelve; between levels B and C at ages eight, nine, eleven; between levels C and D at ages nine, ten, twelve; and between levels D and E at ages nine and ten. In reading, significant differences appear for the same pupils between levels A and B at ages nine, ten, eleven; between B and C at ages eight and nine; between C and D at ages eight, nine, ten, twelve; and between D and E at ages nine and ten. The direction of these significant differences is not, however, always constant from A to E, especially in age groups eight and nine. Nor is it quite the same in the two tests.

The degree of relationship between social level and intelligence-test performance (as expressed by Pearson's coefficient of contingency) for ages eight, nine, ten, eleven and

twelve is .31, .33, .21, .26, and .37. That between reading performance and social level at the same ages is .35, .37, .22, .25, and .29.

Some indication as to the extent of overlapping between one level and the next may be obtained by inspection of Table III, which shows for each groups of schools the number of pupils tested, the number attaining a mark above the seventy-fifth percentile, and the total number of pupils in the schools in that group.

TABLE III.—NUMBERS OF PUPILS ABOVE SEVENTY-FIFTH PERCENTILE SCORE:
SCHOOLS OF DIFFERING SOCIAL LEVEL.

<i>Level.</i>	<i>A.</i>	<i>B.</i>	<i>C.</i>	<i>D.</i>	<i>E.</i>
Total of School Population	12,238	59,598	52,364	24,797	10,578
Number Tested	245	801	552	340	200
Number above Seventy-fifth Percentile in Intelligence..	127	228	128	43	14
Percentage above Seventy-fifth Percentile in Intelligence	51.8	28.5	23.2	12.6	7.0
Number above Seventy-fifth Percentile in Reading....	97	222	151	59	13
Percentage above Seventy-fifth Percentile in Reading..	39.6	27.3	27.2	17.3	6.5

While relatively a much larger proportion of pupils of social level A are found with a score above that of the seventy-fifth percentile,¹ absolutely the largest numbers of pupils of such ability are in the schools at social levels B and C—the number for the five groups probably approximating to 6,500, 17,000, 12,000, 3,000, and 750 respectively out of a total school population of about 160,000 pupils.

The same finding holds with respect to reading ability, as measured by the test, the proportionate numbers of pupils of rather superior ability being probably in the region of 5,000 from schools of social level A, 16,500 from those of social level B, and 13,500, 5,000, and 700 from the schools of social levels C, D, and E.

It is to be noted, of course, as indicated above, that information was not available as to the intrinsic educational and cultural level of each home, and it is possible that some proportion of the pupils above the seventy-fifth percentile rank in Group B come from the homes more approximating to Group A level, and similarly, some of those in D may come from homes more approximating to the levels B and C.

(2) *Comparison of pupils according to size of house.*—Through lack of co-operation on the part of parents it proved possible to collect information for this section of the report from only 771 pupils in fifteen schools. Results are given in Table IV (which show the mean score and standard deviation for groups of pupils from homes of varying size) and Table V (which gives the numbers of pupils above the seventy-fifth percentile score and the number of occupied houses of the given size).

¹ The seventy-fifth percentile was chosen as that level approximating roughly for the intelligence test to an I.Q. of 110, and therefore representing a line of demarcation which would make the findings of this enquiry comparable with those of other discussions such as those of Stoke cited by Freeman (1), Gray and Moshinsky (2), Dreyer (3), Rusk (4) and McQueen (5): (1) FREEMAN, F. S.: loc. cit.; (2) GRAY, J. L., and MOSHINSKY, P.: "Ability and Opportunity in English Education."—*Sociol. Rev.* 27, 1935, pp. 113-161; (3) DREYER, J.: "The Distribution of Intelligence in the Community and its Significance for Higher Education."—*Scottish Educ. J.*, 24th March, 1939; (4) RUSK, R. R.: *Mental Survey of Scottish Children in The Testing of Intelligence.*—Evans, 1936; (5) MCQUEEN, H., et al.: loc. cit.

(Cf. also footnote, p. 74, above.)

TABLE IV.—DISTRIBUTIONS OF SCORES IN READING AND IN INTELLIGENCE :
PUPILS FROM HOMES OF VARYING SIZE.

<i>Apartments.</i>		1			2			3			5+		
<i>Ages.</i>		<i>N</i>	<i>m</i>	σ	<i>N</i>	<i>m</i>	σ	<i>N</i>	<i>m</i>	σ	<i>N</i>	<i>m</i>	σ
8 and 9.	Intelligence	31	35.94	14.79	202	44.85	16.64	31	53.07	14.79	7	59.29	26.53
	Reading ..	31	8.15	3.86	202	9.32	4.59	31	11.45	4.02	7	13.00	3.59
10 and 11.	Intelligence	32	51.81	14.89	188	59.57	18.84	70	70.73	19.53	46	87.52	15.3
	Reading ..	32	12.63	3.88	188	13.24	4.22	70	15.19	3.83	46	17.31	2.04
12 and 13.	Intelligence	6	56.52	12.04	88	71.00	15.11	35	85.26	14.84	35	96.33	16.27
	Reading ..	6	13.50	2.69	88	15.36	3.46	35	17.63	1.86	35	17.89	1.62

TABLE V.—NUMBER OF PUPILS ABOVE SEVENTY-FIFTH PERCENTILE SCORE :
HOMES OF VARYING SIZE.

<i>Apartments.</i>	1	2	3	5+
Total Number of Occupied Houses of Given Size.....	40,537	114,296	55,950	22,654
Number of Pupils Tested	69	478	136	88
Number above Seventy-fifth Percentile in Intelligence....	6	84	46	60
Percentage above Seventy-fifth Percentile in Intelligence..	8.7	17.6	33.8	68.2
Number above Seventy-fifth Percentile in Reading.....	5	89	49	44
Percentage above Seventy-fifth Percentile in Reading	7.2	18.6	36.0	50.0

Significant differences were found in intelligence-test scores at each age and between each size of house with the exception of those from homes of three and of more than four apartments at ages eight and nine. In reading ability there was evidence of significant differences between pupils from homes of two and of three apartments in each age group, and between those from homes of three and of more than four apartments at ages ten and eleven.

Again, the proportion of bright children is very much greater in the larger houses than in the smaller—68 per cent of those in the houses of more than four apartments as against 9 per cent of those in the one-apartment houses.

When, however, the number of occupied houses of various sizes is considered in relation to the number of pupils in the samples tested, there seems evidence that the majority of pupils above seventy-fifth percentile rank come from the houses of two and three apartments.

B.—Tests of ability in arithmetic.

Comparable results were obtained from an analysis of the arithmetic scores of 1,324 pupils of the age-groups eight to twelve abstracted from another educational survey of 1,800 pupils. The average score of pupils from more prosperous social groups was on the whole higher than that of pupils of the same age attending schools in more necessitous districts. Differences were not, however, always significant, nor was their direction always constant. There was again evidence which seemed to indicate that although children of higher intelligence are found in much larger proportionate numbers in the most prosperous homes, the number of such homes is so much smaller that an absolutely larger

number of pupils of superior achievement are to be found in homes at the second and third social level. In the two lowest levels the number is also absolutely less than in the highest and far less proportionately.

V.—SUMMARY OF RESULTS AND CONCLUSIONS.

(1) An analysis was made of the performance in standardised tests of representative samples of 2,138 and 1,324 pupils from the schools of a Scottish city at ages eight, nine, ten, eleven, and twelve. The scores were considered in relation to the degree of prosperity of their homes.

(2) When average scores were compared there was evidence of differences between pupils of the same age in various social groups—the more prosperous, on the whole, scoring more highly.

(3) This relationship held good whether prosperity was assessed from the number of apartments in the home or from the percentage of necessitous pupils in the schools attended.

(4) Differences between successive levels were not, however, in each case significant. They were most distinct between sections most widely separated by economic conditions, and there were fewer variations in their order at ages ten, eleven, and twelve than at ages eight and nine.

(5) When assessment was made of the degree of relationship between socio-economic level and test-performance, the correlations proved to be positive and to average approximately $+0.3$.

(6) When analysis was made of the dispersion of test-results and consideration was given to the relative sizes of the sub-groups represented, it was found that (in intelligence, in reading ability, and in arithmetic) while relatively much the largest proportion of pupils above seventy-fifth percentile rank came from homes of the highest socio-economic level the largest absolute numbers appeared to be in homes at the middle social levels. In the lowest levels the number seemed absolutely less than in the highest and also far less proportionately.

(7) Further investigations seem desirable: (a) by means of studies of one set of pupils over a period of years, and (b) by a consideration of evidence as to the more intrinsic characteristics of the homes and comparison of results obtained by such a classification with those consequent on the use of a criterion more strictly socio-economic in nature.

ABILITY AND INCOME

By CYRIL BURT.

I.—*Influence of innate ability and parental income on entrance to universities.* II.—*Is ability as assessed by intelligence tests really innate?* III.—*The relation between the distribution of ability and the distribution of income.* IV.—*Summary.*

I.—INFLUENCE OF INNATE ABILITY AND PARENTAL INCOME ON ENTRANCE TO UNIVERSITIES.

Problems.—In discussions on post-war reconstruction one of the commonest demands is for "equal educational opportunities for all." There is a widespread impression that the children of the poor generally, or (as the more cautious prefer to put it) the brightest children among the poor, are at present prevented by economic handicaps from enjoying the fuller and higher type of education which children from richer homes can secure by simply paying fees. Two questions of fact, therefore, urgently call for investigation: What proportion of the non-fee-paying population are really capable of profiting by higher education? What proportion of these actually fail to obtain it? In a questionnaire recently sent out to about 400 educationists and teachers we found that very few were willing to hazard any precise opinion on these points; and, indeed, what little evidence there is has rarely been subjected to an objective scrutiny.

In London (to take one of the most striking illustrations) a survey¹ of junior county scholarship awards during the years preceding the last war showed that in certain electoral divisions (N. St. Pancras, N. Hackney, Lewisham, Dulwich, and Hampstead) the average number of scholarships annually awarded was about six or seven per 1,000 pupils in attendance; in others (S. St. Pancras, Finsbury, Bethnal Green, S. Islington, W. Southwark, N. Lambeth) it was less than one per 1,000. A study of entrants to the universities reveals a still more startling anomaly. Taking figures for all England and Wales, it appears that, out of a total age-group, comprising something like 700,000 persons, about 660,000 belong to the elementary school or non-fee-paying class, and only 40,000 to the fee-paying class; yet of the former less than 5,000 annually enter the universities, and out of the latter more than 6,000; that is, only 0·7 per cent in the one case, and nearly 15·0 per cent in the other. This means that, if a child's parents can afford fees for his early education, his chances of going to a university are more than twenty times as great as they would be if such fees could not be afforded.

As psychologist to the L.C.C., one of my first tasks was to inquire into the causes for these persistent discrepancies. When from time to time the matter came up for review before the education committee, various explanations were put forward—lack of efficiency in the teachers at certain schools; lack of interest among the parents in their children's educational progress; malnutrition or ill-health in the children themselves; and, most frequently of all, the poverty of the family and all that poverty entails. It may, therefore, be helpful to begin by summarising the more relevant facts, collected at different times during school surveys with the aid of psychological tests and the assistance of the local care committees, and recorded in some of my published or unpublished reports.

Data.—First of all, there can be little question that the intelligence of children, and still more of adults, differs appreciably according to the occupational class to which they belong. Average I.Q.'s are shown in Table I.² Within each occupational category, however, the range of variation is enormous. The standard deviations lie between 9 and 14 for adults and 12 and 16 for the children: the range is greatest in the middle categories, and least in the upper.

¹ The data are tabulated in full in the L.C.C.'s annual report on *London Statistics*, Vol. XXIV (1913-14), p. 434. Later figures will be found in *The Backward Child* (1937), Table IV.

² These figures were obtained during surveys carried out for the London County Council and the National Institute of Industrial Psychology. The classification follows that which I adopted in our joint *Study of Vocational Guidance* (H.M. Stationery Office, 1926, p. 16).

TABLE I.—INTELLIGENCE OF PARENTS AND CHILDREN CLASSIFIED ACCORDING TO OCCUPATIONS.

Occupational Category.		Average Intelligence Quotient.	
		Children.	Adults.
Class I.	Higher professional: administrative	120.3	153.2
Class II.	Lower professional; technical, executive.....	114.6	132.4
Class III.	Highly skilled; clerical	109.7	117.1
Class IV.	Skilled	104.5	108.6
Class V.	Semi-skilled	98.2	97.5
Class VI.	Unskilled	92.0	86.8
Class VII.	Casual	89.1	81.6
Class VIII.	Institutional.....	67.2	57.3

For the sake of comparison I have expressed the figures for adults, as well as for children, in terms of I.Q.'s. With an adult a statement of the I.Q. is somewhat arbitrary. Roughly, an I.Q. of 100 may roughly be taken as equivalent to a mental age of about 15. Assuming that the step denoted by one mental year after puberty is the same as before puberty, and that the distribution is approximately normal, an s.d. of 16 would mean that the *range of mental age among a hundred adults would be from about 9 to 21 mental years*. Thus, the dullest would be almost a certifiable defective; the brightest would be as much above the average as the defective is below; and *every intermediate grade between is represented*: there are no gaps.

The correlation between children's intelligence and economic status was found to be approximately .32.¹ In the L.C.C. elementary schools the children from 'superior' homes were about 10 I.Q. above the average, and those from 'poorer' homes about 10 I.Q. below.²

In view of the small differences *between* the groups and the large differences *within* them, it may seem at first difficult to say which line of argument to emphasise. (1) Looking first at the group-averages, it might be argued; if the father is in an occupation where he can earn sufficient income to pay for his child's education, then in all probability his innate ability is above the general average by at least 20 per cent; his child, therefore, inheriting about half that ability, is likely to possess an I.Q. that is higher than the general average by at least 10 per cent. Hence a larger number of scholarship awards and university entrances is only to be expected among children from fee-paying classes. (2) However, on turning to the standard deviations, we observe that, within each economic class, the range of individual differences is far wider than the differences between the average levels of any two classes. Hence, we are tempted to infer that the vastly greater numbers of the non-fee-paying class should more than compensate for their slightly inferior average level; so that, even if geniuses are *relatively* rare among the poor, nevertheless in *absolute* numbers the mute, inglorious Miltons may run to many thousands. Consequently the figures for scholarship awards and university entrances may reveal a gross social injustice. The only way to resolve such a dilemma is to undertake a careful calculation.

¹ This figure is based on a carefully studied composite group of 343 cases, chosen so that the several proportions in each category should correspond with those in the population at large: correlations from larger samples agree, when corrected for homogeneity or selection. Coefficients reported by other investigators appear to be in harmony with the above, after allowing for the differences in heterogeneity that different samples are almost bound to show, e.g., Bryn and Henmon, .18; Chauncey, .20; Lawrence, .22; Gray and Moshinsky, .25; McDonald, .26; Duff and Thomson, .28; Chapman and Wiggins, .32; Freeman, .48; Fakuda, .53; Cattell, .89 and .92. (The correlations of Freeman and Fakuda are with cultural status rather than economic; those of R. B. Cattell so exceptional as to indicate some special peculiarity in his data.)

² *Mental and Scholastic Tests*, 1921, p. 191. I there further emphasised the eugenic or rather the dysgenic significance of the size of the families (2.9 children in the former group, 5.2 in the latter). This is an important problem to which one of my former research students (Dr. R. B. Cattell) has since devoted special attention.

Potential University Entrants in the Fee-paying and the Elementary School Classes.—The detailed surveys that have been carried out among both school and adult populations enable us to estimate, at least approximately, the number of pupils to be expected within almost any of these social classes and above almost any line of demarcation. In my earlier reports, estimates were made from time to time on this basis for potential entrants to both secondary schools and universities; and, now that more accurate figures are available for the latter, it seems worth while to review the problem at its final stages once again.¹ The successive steps in the necessary calculations are as follows:

(1) *The University Standard.*—Taking estimates based on the Census of 1931, in the year 1939-40 (the last year for which detailed figures for university entrants are available) the approximate number of persons aged 18 in England and Wales was 709,580. In that year the total number of new full-time entrants to the universities of England and Wales was 10,785, or 1.52 per cent of the total population. Hence, if we assume that the distribution of ability is approximately normal, the borderline for entrance may be assessed as $+2.17$ s.d. (for other years where similar figures are available it fluctuates between $+2.06$ and $+2.25$ s.d.) In terms of the intelligence quotient this may be interpreted as meaning that a student entering the university should have an I.Q. of at least 134.7; and this in turn implies that the ability of the university entrant should (roughly speaking) be at least as far above that of the average person as that of the average person is above that of a borderline defective.

It would be possible to complete the calculation without embarking on the difficult question: what do this and other borderlines mean, when translated from standard deviations to terms of the I.Q.? Most readers, however, find it easier to think in terms of an I.Q., so I shall translate my argument accordingly. For this purpose we have first to decide what is the probable standard deviation of the general population in terms of the I.Q.

(2) *The Standard Deviation of the General Population.*—The most reliable figures would seem to be those obtained with 'group tests' of intelligence similar to those used for junior county scholarship examinations and for the examination of ex-service candidates after the last war.² On equating the results with I.Q.'s obtained with the London revision of the Binet scale, I estimate that the standard deviation of the upper half of the curve of distribution is approximately 16 I.Q. This yields the figure for university entrance quoted above, namely, 134.7 I.Q.

¹ In addition to acknowledging my indebtedness to teachers and others who assisted in the earlier surveys, I am particularly grateful to Miss Joan Mawer for compiling much of the data on which the following conclusions are based, and for thus bringing my earlier computations up-to-date. A fuller account of sources and calculations, with detailed tables, will be found in her degree essay on *The Relative Influence of Mental Ability and Economic Class on Entrance to the Universities* (filed at the Psychological Laboratory, University College).

² The tests which I drew up for this latter purpose (slightly revised) were subsequently published by the National Institute of Industrial Psychology under the title of 'Group Test No. 33.' They were used regularly for entrants to the London Day Training College, for our own students at University College, for investigations on vocational guidance among adults in various fields of work, and more recently for recruits in the Army. Consequently, a good deal of data is now available. It is advisable, however, to note several complicating difficulties, commonly overlooked in discussions on the general standard deviation. (i) The variability, in terms of the I.Q., is itself bound to vary somewhat with the type of test used: results based on group tests may differ appreciably from those based on individual tests of the Binet-Simon type. (ii) As the efficacy of each type of test is improved, the resulting standard deviation is likely to increase: thus it is generally larger with revised versions of the Binet tests than with the original. (iii) If my own figures can be accepted, it is not the same at every age: in particular it appears to increase towards puberty, and to decline after adolescence is over. (iv) We cannot assume that the amount of variability above the average (or below) can be determined by calculating the amount of variability over the entire sample, i.e., that the curve of distribution is exactly symmetrical, much less exactly normal. In the lower half of the population, disease and other disturbances augment the frequency of the more extreme deviations (as is shown by figures for pathological types of the imbecile grade); in the upper half the absence of a definite upper limit to the scale seems (with most tests) to prolong the upper tail still more. There can be no 'mental age' below zero; but there is no *a priori* limit to mental ages in the upward direction, so that an I.Q. above 200 is not impossible, while an I.Q. below 0 is out of the question. Accordingly, my use of tables for the normal probability integral to deduce percentages above any given borderline from the s.d. value of that borderline must be regarded as merely a convenient way of smoothing the empirical data. If figures for the higher moments could be more exactly determined, it might be better to work with a hypergeometric curve. Alternatively, we can calculate the numbers above or below specified percentiles directly from the tabulated data. I have tried both these alternatives as checks; and find little change in the ultimate percentages.

(3) *The Average Intelligence of Fee-Payers.*—We could estimate the expected average for the fee-paying pupils by calculation in much the same way. Thus, with a correlation of .32 between intelligence and economic status, we should anticipate that the average intelligence of the fee-payers would be about 10 I.Q. above that of the general population. Here, however, it seems better to employ an empirical figure. If I can trust my samples, the average level of the fee-paying pupils is approximately 111.6 I.Q.¹

(4) *The Standard Deviation of Fee-paying Pupils.*—If intelligence and income are correlated, we cannot assume that the standard deviation of the small group of fee-payers is identical with that of the population at large. However, by using appropriate formulae to estimate the effects of selection, we can readily deduce the probable size of the standard deviation for the selected sample. The fee-payers amount to between 6 and 7 per cent of the population—say, for purposes of calculation, 6.5 per cent; and the correlation between intelligence, (y , say) and economic status (x , say) is, we have seen, approximately .32. Hence we have (with the usual notation) $\sigma_y/\Sigma_y = \sqrt{\{1 - R_{xy}^2 (1 - \sigma_x^2/\Sigma_x^2)\}} = .955$. Accordingly, if the s.d. in the general population is 16.0 I.Q., then that of the fee-paying section will be about 15.3 I.Q. This estimate agrees with the value arrived at empirically from tests applied direct to a representative sample of fee-payers.

From (3) and (4) it follows that the university entrance standard will differ from the average I.Q. of these fee-payers by $134.7 - 111.6 = 23.1$ I.Q., that is, by ± 1.51 s.d. Judging by the curve of normal distribution, therefore, we should expect about 6.55 per cent of the fee-payers to enter the university. As noted above, we should have reached practically the same estimate, had we based our figures directly on the actual distribution of the frequencies at each level, and also kept the whole calculation in terms of the initial s.d.

(5) *Total Numbers at Age of Entering Universities in Fee-paying and non-Fee-paying Classes.*—According to the census there were 725,540 children aged 9 in 1930-31. Of these, as we find from the Board of Education returns, 679,590 were then on the rolls of the public elementary schools, and another 1,793 had been formerly in elementary schools: this makes a total of 681,383 children in the non-fee-paying group. The remaining number, 44,157, can presumably be regarded as members of the fee-paying class. In view of the mortality-rate in children between 9 and 18, we should expect only 97.4 per cent of the elementary and 98.5 of the fee-paying children to survive until 18. The final numbers aged 18 in 1939-40 may therefore be assessed as 663,667 and 43,495 respectively. (The total tallies as well as could be expected with the census estimate, when we allow for migration and other minor factors.)

(6) *Expected and Actual Numbers of Entrants.*—From the report of the University Grants Committee, we learn that, of the entire number of full-time students actually entering the universities during the year in question (*viz.*, 10,785), only 4,531 were ex-pupils of public elementary schools; the remainder, we may presume, namely, 6,254, were drawn from those whose parents had paid for their early education. Now, according to the theoretical proportion as calculated in (4), we should have expected only $.0655 \times 43,495 = 2,849$ to come from the fee-paying classes, and the balance, namely, $10,785 - 2,849 = 7,936$, to be made up of ex-pupils from elementary schools. The difference between the expected number and the actual number of ex-elementary pupils is $7,936 - 4,531 = 3,405$. We may, therefore, infer that out of all the ex-elementary pupils who were endowed with sufficient ability to enter a university during the year in question, as many as 42.9 per cent failed to do so.

The figures for the preceding year (1938-9) prove to be much the same: out of an expected number of 7,640 ex-elementary pupils, only 4,341 actually entered, and therefore 3,299—that is, 43.2 per cent—failed to do so. For the earlier years, the post-war fluctuations in the birth-rate, the wide variations in the number of students at different universities, and the inadequate details about entrants, render comparable figures less easy to ascertain. Nevertheless, from 1935 onwards, the proportions seem to have been of much the same order, namely, between 40 and 45 per cent.

¹ This average (like the figure the standard deviation referred to in section 4) is derived from one or two special inquiries described in a *Memorandum on the Influence of Ability and Economic Class on Entrance to Secondary Schools and Universities*: the detailed figures are given in Miss Mawer's thesis cited above. The estimate agrees with what can be inferred from the class-averages shown in Table I, and with estimates obtained from various independent studies. Thus, we found that the average I.Q. of fee-paying children attending secondary schools was 114; of scholarship winners, 133. (Cf. Board of Education, *Report on Tests of Educable Capacity*, pp. 162-4.)

Similar reasons make it difficult to decide whether any progress has been made towards easing the ladder for the poorer child during the last ten or fifteen years. To answer this question it would seem better to estimate what proportion of *all* ex-elementary pupils (i.e., of the total number regardless of ability) have entered the universities. If the calculations can be trusted, it would appear that during 1936-9 the proportion was between 0.6 and 0.7 per cent; during 1925-35 it apparently averaged only 0.4 per cent, or very little more.

There are, no doubt, several questionable assumptions in the foregoing argument. On various grounds, it would seem that the statistical analysis is, on the whole, most likely to have under-estimated both the average and the numbers in the upper tail for the distribution of intelligence among the fee-payers, and to have over-estimated both the standard deviation and the numbers in the upper tail for the distribution of intelligence among the non-fee-payers. On the other hand, early ill-health and lack of intellectual opportunities may (in spite of the most careful precautions and allowances) have tended to reduce both the average and the numbers in the upper tail among the non-fee-payers. After computing the possible effects of such disturbances either way, I think it safe to pronounce that the true proportion cannot be less than 25 per cent nor more than 55 per cent. I conclude, therefore, that in round numbers about 40 per cent, or 2 out of 5, among the pupils from the elementary school, who are capable of a university education, never obtain it. It would, of course, be an error to suppose that every child of sufficient ability—whether girl or boy—either wants to, or ought to, become a student at a university on reaching the age of 18. Yet it seems clear that a considerable fraction, though not (as has sometimes been alleged) "the majority," of those who would and should do so, are nevertheless prevented by purely economic handicaps.

The upshot of the whole analysis may be concisely summarised in a four-fold table. The figures in Table II show the averages for the most recent years for which reliable data are available. They are expressed as percentages of the entire age-group, so as to be independent of any fluctuation in the size of the population from one year to the next.¹ From the figures for the 'expected proportions' we can, if we wish, calculate the tetrachoric correlation between ability and economic status: it proves to be .341, which accords with the product-moment coefficient as calculated from samples intensively studied, and cited above.

TABLE II.—PERCENTAGES OF TOTAL AGE-GROUP ENTERING OR NOT ENTERING UNIVERSITIES.

Category.	A.—Expected Proportions.			B.—Actual Proportions.		
	Entering.	Not Entering.	Total.	Entering.	Not Entering.	Total.
Non-Elementary	0.4	5.8	6.2	0.9	5.3	6.2
Ex-Elementary	1.1	92.7	93.8	0.6	93.2	93.8
TOTAL	1.5	98.5	100.0	1.5	98.5	100.0

¹ It will be seen that my figures imply that only 1.20 per cent of the elementary school children (as contrasted with 6.55 per cent of the fee-paying pupils) reach an intelligence level of university standard (roughly 135 I.Q.). The only investigators who have arrived at a conclusion in conflict with this estimate are Gray and Moshinsky. With the help of school teachers they set a group test of intelligence to about 10,000 L.C.C. school children; and, according to their tabulated results, more than 22 per cent were found to have I.Q.'s above 135. The vast majority of these bright pupils, it was contended, were missing the secondary and university education to which they were entitled (*Sociological Review*, 1935, pp. 138 *et seq.*: the results have become widely accepted among social writers owing to the fact that they were reprinted in *A Survey of the Social Structure of England and Wales as Illustrated by Statistics*, by Prof. Carr-Saunders and Dr. Caradog-Jones, 1937, pp. 200 *et seq.*). The investigators, however, were not themselves psychologists; and they employed a test which was not standardised for English school children. Thus, according to their results, over 71 per cent of the children have I.Q.'s above 100, that is, above the average I.Q., which is absurd. From their table we can roughly correct the inappropriate standardisation; and the figures so inferred are consistent with those reported here.

II.—IS ABILITY AS ASSESSED BY INTELLIGENCE TESTS REALLY INNATE?

The sceptical reader will doubtless question my initial assumption that the higher I.Q.'s found among children of the fee-paying classes really represent inborn differences partly inherited from parents who themselves owe their superior incomes to their superior mental efficiency. Now, as will be obvious from my previous publications, I should be the last to maintain that every child who gets a high (or a low) I.Q. in the Binet tests, or in a written group-test of intelligence, must therefore of necessity be endowed with a high (or low) innate ability: to take only the most conspicuous exceptions, one child may do well in such tests because of his exceptional verbal fluency; another may do badly because he has played truant, and so missed the rudiments of instruction which all such tests presuppose. Nevertheless, the cautious opinions on this matter uttered by psychologists are often, I fancy, misinterpreted by advocates of educational and social reform, owing to the fact that they have so frequently misunderstood the issue in which the psychologist is primarily interested. The psychologist wants, first of all, to know how far the results of each particular test, taken by itself and uncorrected by other information, may be relied upon to reflect the innate abilities of individual children; and he discovers that, with this test or with that, their performances and their scores are, in certain cases at any rate, appreciably affected by environmental advantages or handicaps.¹ But, when he turns from the theoretical question of test-reliability to the practical task of assessing the innate ability of Harry or Tom, he would never rely merely on a single automatic test-measurement, unchecked by any other observations. Yet the social and educational workers who note his careful reservations are apt to infer that all variations in intelligence as such, however carefully they have been measured and checked, must largely depend on environmental conditions.

Much of the controversy has arisen because the terms employed are not always explicitly defined. The definitions now accepted pretty generally in this country have been reached in the following way: (1) The earliest experiments appeared to demonstrate that a general cognitive factor enters into all that we say or do or think, and accounts for quite 50 per cent of the variance displayed in these different processes (practical as well as intellectual) whenever they are quantitatively assessed. This hypothetical general factor, so far regarded simply as an abstract statistical concept, was conveniently designated *g*. (2) Subsequent experiments appeared to indicate that the greater portion of this general factor (possibly the whole of it, could it be measured with precision) is dependent on the individual's innate or hereditary constitution. This innate general cognitive factor is what psychologists understand by the word 'intelligence': indeed, from Binet onwards practically all the investigators who have attempted to construct 'intelligence tests' have been primarily searching for some measure of *inborn* capacity, as distinct from acquired knowledge or skill.

With such an interpretation it obviously becomes foolish to inquire how far 'intelligence' is due to environment and how far it is due to innate constitution: the very definition begs and settles the question. The proper points to ask are really these: First, how far does the innate factor of intelligence determine successful performance in this or that test, or in this or that concrete achievement (e.g., school progress or industrial efficiency)? And, secondly, how far does the innate factor of intelligence differ from one family to another, or from one social or economic class to another? To gain a rough

¹ The more important studies on this problem are admirably summarised in Sandiford's *Foundations of Educational Psychology* (1938, pp. 71-135, which includes a full bibliography). Of the numerous researches the greater part have been carried out in the United States, and the general verdict of American psychologists is perhaps best expressed by Barbara Burke: "Home environment contributes about 17 per cent of the variance in I.Q." (as actually tested); "parental intelligence accounts for about 33 per cent; and the total contribution of innate and heritable factors is probably not far from 75 or 80 per cent"; with tests of the Terman-Binet type, uncorrected by any supplementary evidence, about "70 per cent of the children tested obtain an I.Q. within six to nine points of that representing their innate intelligence" (27th Yearbook, 1928, p. 309). Sandiford sums up the matter in a sentence: "With intelligence as measured by intelligence tests, the contribution of heredity is about four times as potent as that of home environment" (*loc. cit.*, p. 95).

answer we may use the ordinary imperfect tests, and accept the I.Q. (corrected or uncorrected) as the best available measure of the individual's inborn ability; even if it turned out that an I.Q. obtained with some one particular test was largely dependent on the child's health or educational opportunities, that would not suffice to demonstrate that 'intelligence' (in the psychologist's sense) was not inborn.

Actually, I imagine, most psychologists believe that differences in intelligence are innate, not merely because of the results obtained with the standard tests of intelligence, but rather because of the vast mass of converging evidence, consisting partly of general inferences, and partly of data procured by various methods of observation, including tests quite different from the standardised scales in practical use and familiar to the educational student. Perhaps, therefore, it will be helpful to summarise quite briefly what appear to be the most convincing lines of argument, and (since some writers have doubted whether it is fair to apply American conclusions to English children) to illustrate those arguments, so far as space allows, from material collected in British schools during inquiries carried out by myself, my colleagues, or my research students.¹

(1) Social reformers in this country have always been deeply impressed with the powerful influence of education or the lack of it, and, until the days of Darwin, tended to ignore the influence of heredity, at any rate within the human race. Their philosophic affiliations incline them to accept Locke's doctrine of the new-born mind as a *tabula rasa*; and their more up-to-date adherents think they can discover scientific support for their views in the pronouncements of the American behaviourists. They quote Watson's declaration: "There is no such thing as an inheritance of capacity."² Yet even Watson acknowledges hereditary differences in structure; and 'intelligence,' as the psychologist understands it, must depend essentially on the structural organisation of the brain or central nervous system (and doubtless on its chemistry as well). Since for almost every characteristic that is not directly indispensable for mere survival, innate difference is the rule throughout the animal kingdom, it would be all but inconceivable to the biologist if human intelligence were identical in every normal individual, and if the mental defectives and the geniuses were freaks and exceptions.

(2) These *à priori* inferences, however, call for direct verification by empirical means: and the actual existence, and still more the extent, of such differences can only be determined by statistical surveys based on a properly controlled experimental technique. These reveal that every intermediate grade, from mental deficiency up to the highest genius, is fully represented in the general population. Variety, not uniformity, is everywhere the rule, however uniform the environment.

(3) But here as elsewhere it is exceedingly difficult, if not impossible, to draw a rigid line between what is hereditary and what is environmental. Nevertheless, in many researches an attempt has been made to devise tests (often of the nature of laboratory experiments) on which the superior cultural conditions of the successful child could have had no helpful influence—indeed, if anything, rather the reverse. Thus, in what I believe was one of the earliest studies of the problem, a series of experimental tests of a sensori-motor type, and of varying degrees of complexity, were applied both to children of elementary schools and to children

¹ Some of the inquiries have been published in L.C.C. reports or elsewhere: but the majority remain buried in typed memoranda or degree theses. I should like to repeat my acknowledgments to the many workers who assisted me.

² It was the traditional doctrine handed down from Aristotle and the scholastics to Descartes. Descartes opens his *Discourse on Method* by announcing that he is "disposed to adopt the common opinion of philosophers, who say that the difference of greater or less holds good only of *accidental* characteristics," and that, in their "essential form or nature," all individuals of the same species are identical: further, since "it is reason alone that distinguishes us from the animals and constitutes us men," reason must be "complete in each individual"; it therefore follows that "what is called reason or good sense must be, by nature, *equal in all men*." (Cf. *Helvétius*: "La grande inégalité d'esprit qu'on apperçoit entre les hommes dépend uniquement de la différente éducation qu'ils reçoivent." *De l'esprit*, 1758, III, 26.) Descartes' argument seems to express explicitly the feeling of the modern social reformer. It may be added that, if we re-interpret the scholastic phrase 'essential nature' to mean those characteristics directly needed for survival, and 'accidental' to mean, not those due to the accidents of time and place in the individual's life-history, but rather those which are not absolutely indispensable for survival, then the Cartesian premises, but not the conclusion, might still be accepted by any modern biologist.

³ WATSON: *Behaviourism* (1930), p. 94; but cf. *ibid.*, p. 100.

attending a preparatory school, who were sons of Oxford professors and lecturers. In this and several subsequent researches it appeared that, the more the test was saturated with the 'general factor,' the higher were the performances of the children of abler parents; and the more it depended upon educational acquirements, the higher were the performances of the elementary children, who came from somewhat poorer homes, but who at these earlier ages had received a better grounding in the more fundamental school subjects. Further, it was in the complex tests, i.e., in those depending most on the 'general factor,' that the correlations between parents and children, or between brothers and sisters, were found to be greatest.¹

(4) The differences between individuals in the same economic class prove to be far wider than the differences between the averages for different economic classes. Thus, numerous children from the poorest homes, brought up under the most unfavourable conditions, achieve I.Q.'s of 130 or above; while others from the most comfortable and cultured homes get I.Q.'s of only 70 or below. If the high I.Q.'s obtained by the average members of the better classes are to be attributed chiefly to their environmental advantages, how can we explain the low I.Q.'s of so many others in those classes, or the high I.Q.'s of poorer children?

(5) Current handicaps, arising from environmental conditions, such as physical ill-health, lack of cultural opportunities, or passing emotional disturbances, as a rule make very little difference to the I.Q. when properly assessed. In following up cases of various types, I have encountered many instances where the child's home conditions have been vastly improved, and still more where they have rapidly deteriorated: yet, even after five or ten years in the changed environment, the I.Q. seldom alters greatly. This conclusion is further confirmed by re-testing evacuated children after two years or more in their new surroundings. Even prolonged disease or malnutrition, as Shepherd Dawson has shown, exerts very little influence, provided the nervous system itself is not directly attacked.

Yet this, to my mind, does not altogether dispose of the possibility that poverty and its concomitants may permanently impair 'intelligence.' If bad feeding, infectious disease, and the like exert any serious influence on mental ability, the damage, I believe, is most likely to be done *during the first few years of life, before ever the child comes to school*: and such impairment, I can readily imagine, might be lasting. The real question, therefore, is—how frequent and how serious are the effects of such pre-school handicaps?

(6) To this question the best reply is to be found in comparative studies of children at residential schools and orphanages, where the inmates are received during early infancy, and where the environment is virtually the same for all. Such data are not easy to procure on any large scale; but the following results may be cited from one of my earlier reports.

In inquiries on children adopted, boarded out, or transferred to residential institutions, an endeavour was made to compare the intelligence of the children with that of their parents. These inquiries differed somewhat from similar researches reported by American investigators. Unlike the theoretical investigator, the school psychologist attached to an education authority is rarely content to assess the I.Q. of a doubtful or special case on the basis of a single test alone; even if he uses the Binet scale as his chief stand-by, he regularly supplements it by others (performance tests, for example, or tests of reasoning); and, before he reaches his final verdict, he will make numerous allowances for disturbances due to shyness, emotional instability, ill-health, reading disability, fatigue, lack of interest, and the like.² The I.Q.'s

¹ BURT: "Experimental Tests of General Intelligence."—*Brit. J. Psych.*, III (1909), pp. 175 *et seq.*: "The Inheritance of Mental Characteristics."—*Eugenics Review*, IV (1912), pp. 180 *et seq.*

² If these allowances are not made, then improved (or depressed) environmental conditions appear to raise (or depress) the I.Q., as assessed by the Binet scale with younger or duller children or by group-tests with older children, by about five or six points. In exceptional cases (about once in a thousand cases) the distortion may amount to as much as fifteen points. The experienced psychologist, of course, always endeavours to detect and allow for such distortions, before declaring that the child is mentally defective or reporting on his case to the school authority. The need for such corrections was admirably shown by the results obtained by Mr. Hugh Gordon, H.M.I., with canal boat children. He found an average I.Q. with the Binet tests of 69. When, at my suggestion, Dr. Frances Gaw applied performance tests to the same group, she found an average I.Q. of 82 (cf. *The Backward Child*, p. 59, and refs.). I may add that, in my experience, most of the alleged 'cures' of certified mental defectives are usually obtained with children certified by doctors untrained in the pitfalls of psychological testing, who have diagnosed mental deficiency by simply taking at its face value an I.Q. based on the printed version of the Terman-Binet scale (which was not standardised for English children) without any further adjustments.

of the residential pupils were first assessed in this way; and subsequently the desired information procured about the parents from independent investigators. It was found that, even among children whose mothers belonged to the poorest or most undesirable classes, there were a small proportion having I.Q.'s well over 100. In such cases we commonly learned later on that the child was the illegitimate offspring of a father belonging to a superior social class.

During a period of fifteen years it was possible to accumulate many instances of this kind. Thus, my records included 67 cases¹ where the mother's I.Q. was apparently between 70 and 85, but the father's I.Q. was apparently between 120 and 145; the average I.Q. of the children was 103.2. As a control-group I took a second batch of children (105 in number) brought up under the same circumstances, with mothers whose I.Q.'s ranged between the same limits and fathers whose I.Q.'s ranged between 65 and 100; for these the average I.Q. was 88.6. The standard deviations were 14.3 and 12.1 respectively. The difference, therefore, was 14.6 I.Q., and its standard error 2.1. The odds are enormously against so large a difference being the result of random sampling; and, since both the pre-natal and the post-natal conditions of the children must have been much the same, it seems impossible to escape the conclusion that the difference in their I.Q.'s was the effect of a difference in heredity.

Among 157 children boarded out in foster-homes the following correlations were obtained: (i) I.Q.'s of brothers and sisters in the same homes, .51; (ii) of brothers and sisters in different homes, .42; (iii) of foster-children with foster-parents' own children, .27; (iv) economic status of foster-parents and of foster children's own parents, .24. With coefficients of this size, the p.e. is approximately $\pm .05$. Thus the small correlation between unrelated children in the same home can be almost wholly accounted for by an occasional and very natural tendency to place foster-children in homes resembling those from which they have come.²

(7) To obtain cases where the *environment* is practically identical, the psychologist, as we have seen, goes to residential institutions; to obtain cases where the *heredity* is practically identical, he turns to the study of 'identical' twins. Since the days of Galton and Thorndike, numerous investigations have been made in this very suggestive field, particularly in America. In London, during a survey with the Binet tests covering 3,510 children,³ we found 68 twins of whom 19 appeared to be 'identical' (monozygotic). During subsequent years an additional 121 cases have been added to the data. The correlations between the I.Q.'s are as follows: non-identical twins (156 cases), .54 (little, if at all, higher than for ordinary brothers and sisters); twins of like sex and 'identical' in type so far as could be judged (62 cases), .86 (almost as high as the correlation between two successive testings of the *same* individuals: in the few cases (15 in number) where the 'identical' twins had been reared separately the correlation was .77). And, in general, the remoter the family relationship the smaller the correlation: e.g., between first cousins (167 cases), .30; second cousins (86 cases), .24.⁴

As regards acquired educational attainments, I will only note one suggestive point. Both for twins and for ordinary brothers and sisters, the average correlations are decidedly higher for brighter children than for duller (with sibs over 100 I.Q. it is .61; with sibs under 100 I.Q., only .47). Thus, paradoxically enough, the influence of a good environment appears most

¹ There were in addition a few cases in which I learnt that the father had made special arrangements for the mother's care just before or just after the birth of the child. These I have omitted.

² For the data relating to these boarded-out children I am indebted to Miss Conway, who was good enough to carry out the inquiry at my suggestion. She reports that, had the I.Q.'s been estimated solely on the Binet scale, the correlation between foster-children and the foster-parents' own children would have risen to .36.

³ *Mental and Scholastic Tests*, p. 131.

⁴ All the above correlations have been calculated by Fisher's formula for intra-class correlation. American investigators have used either the ordinary product-moment formula or the Otis difference formula (which assumes that the means for the two series are identical). A novel method of analysis was attempted by Miss V. Molteno, who up to the outbreak of the war, was working up data obtained for twins in London. She has applied the alternative technique of 'correlating persons' to numerous assessments for a variety of mental characteristics (collected by herself and Dr. R. B. Cattell). The research unfortunately remains incomplete, but indicates, so far as it goes, that the qualitative resemblances between twins are even more striking than the quantitative. (For references, cf. Cattell and Molteno, *J. Genetic Psych.*, LVII, 1940, pp. 31-47; Herman and Hogben, *Proc. Roy. Soc. Edin.*, LIII, 1933, pp. 105-129.) American investigations on twins are fully summarised by Sandiford (pp. 98-121); on comparing the figures it would seem that, with twins, the correction of the I.Q. (as carried out in our own cases) does not, as a rule, greatly alter the results. There is one minor exception. Most observers report that, if anything, the I.Q. tends to diminish with age; if confirmed, that, of course, militates against the theory that the resemblance is the cumulative effect of similar environments. We ourselves, however, have so far found no significant difference at different ages.

conspicuous where the influence of good heredity is also most conspicuous. There is an obvious practical corollary: it is *far more urgent to provide brighter children with an education appropriate to the ability of each than to do so for the dull, the backward, or the defective.*

Taken together all these items of evidence strongly corroborate Galton's hypothesis that the intellectual achievement of individuals depends largely on a capacity which is inherited or, at any rate, inborn. It is this inborn capacity, as we have seen, which intelligence tests have been constructed to measure and the I.Q. designed to assess. If, as now appears, they test and assess it pretty successfully, it follows that the differences—not very wide, but fully established—between the average intelligence of different social classes are themselves largely innate. The implication seems clear. However much the education and the health of children in the poorer classes are improved, we shall not succeed in raising their average I.Q.'s (when properly assessed) by more than a very few points. It therefore becomes all the more urgent to discover those numerous individuals, in the poorer as well as in the wealthier classes, who are endowed at birth with high native abilities, and to give them the full measure of education which their superior intelligence deserves.

III.—THE RELATION BETWEEN THE DISTRIBUTION OF ABILITY AND THE DISTRIBUTION OF INCOME.

So far I have argued that differences in income, and in economic and social advantages generally, cannot form the sole or even the main cause of the observable differences in mental ability. Is it, then, reasonable to conjecture that these differences in innate mental ability may after all form the main cause, though not perhaps the only cause, of the wide differences in income or earnings? If that were so, the first and most obvious consequence would be that the distribution of individual ability would resemble the distribution of private incomes.

Accordingly, in our surveys of mental ability, one of the first questions to decide (if I may quote the terms of my earlier *Report*) was this¹: "Is intelligence distributed like income, where those who have little are the commonest type and those who have much are few and far between? Or is it distributed like height and other physical characteristics, where the average type is the commonest, and the dwarfs and the weaklings are almost as rare as the giants and the strong?" As we have seen, the results obtained seemed definitely to favour the latter hypothesis; and with this general conclusion most psychologists, I imagine, would now agree. If, however, we accept the theory of a normal (or nearly normal) distribution, how are we to account for an amazing disparity between the ascertainable curve for incomes and the assumed curve for general ability?

From the figures published by the Board of Inland Revenue and other authorities we may calculate that the average income in this country is about £180; the figures for surtax show that more than sixty persons have incomes of above £100,000, and the largest incomes

¹ *Distribution of Educational Abilities* (1917), pp. 34 f. and Fig. 6; *Mental and Scholastic Tests* (1921), p. 162 and Fig. 24. My conclusion in these and other cases was that the distributions were "only approximately normal": on applying the recognised statistical test for 'goodness of fit', the departure from normality proved to be significant in every instance (P always less than .01). Dearborn (*Intelligence Tests*, 1928) reproduces for comparison curves from various investigations in America: "In all," he says, "the distribution is symmetrical and continuous" (and, one might add, approximately normal); "practically the same range and distribution of individual differences in intelligence which were found by Burt in the schools of London are found in the schools of Boston" (p. 85; cf. pp. 150 *et seq.*). In a paper on 'The Mental Differences between Individuals' (*Brit. Ass. Ann. Rep.*, 1923, p. 229), Fig. 1, I later gave results for 8,599 adults. Here the conclusion was the same—approximate normality only. (I may add that data from intelligence tests now being applied in the Army seem in complete conformity with these earlier inferences.) More recently, however, Thorndike has applied the same test of significance to pooled distributions for the sixth, ninth, and twelfth grades in American schools and for freshmen at American colleges: he obtains, in every case, $P = .9999$ or more (*Measurement of Intelligence*, 1927, pp. 521-56; cf. pp. 271-87). Here, however, it seems important to recall the criticisms passed by Fisher and others on such high values for P: "extremely close agreement throws as much suspicion on the hypothesis or the technique as extreme disagreement" (cf. *Statistical Methods*, p. 83).

of all run to over half a million.¹ In the graph for the distribution of intelligence (*The Distribution of Abilities*, Fig. 6), the printer has allowed about two inches for the frequencies below the average; to plot a frequency-curve for incomes on such a scale would require a graph running to over 500 feet in length. To put it another way, if human stature, instead of obeying the normal curve, followed that of incomes, then our richest millionaires would be giants three miles tall, with heads like Mount Blanc capped in perpetual snow.

Prof. Pigou has endeavoured to reconcile the two different distributions in the following way. He agrees that "on the face of things we should expect that, if people's capacities are distributed according to the Gaussian curve of error, their incomes will also be distributed in the same way." But, as he points out, a normal distribution of capacity might easily hold good within the more or less homogeneous groups that have been examined, without holding good of the composite population as a whole. "Brain-workers may constitute one homogeneous group, hand-workers another, but jointly they do not; thus the normal law would rule in each separately, but not in both together."² The wider psychological surveys, however, put this suggestion out of court. Intelligence tests have now been applied to large and comprehensive samples, including school children of every social grade, adults of almost every occupation, and (within the last year or two) thousands of recruits for the Army. The results make it perfectly clear that, although the distribution of ability does not perfectly conform with the normal curve, nevertheless the amount of skewness is much too slight to bear out the explanation Prof. Pigou has suggested. The deviations from normality exhibited by different distributions can be readily compared by computing the appropriate functions of the higher moments (beta-functions); for the normal curve $\beta_1=0$, $\beta_2=3$; for most distributions of intelligence quotients, β_1 lies between 0.0 and 0.2, and β_2 between 2 and 4; for curves of income in Great Britain at various dates, $\beta_1=1.2$ (approximately), $\beta_2=50,000$ or more.

Of the few other economists who have touched upon the psychological problem, the majority seem disposed to abandon the notion of a normal distribution altogether. In particular, Pareto, and still more Pareto's followers in the United States, have declared that the elongated curves of income-distribution can be no economic accident, but represent an iron law resulting from an "inexorable biological fact."

Carl Snyder, for instance, has recently come to the following conclusion: "Where differences of attainment are concerned, the frequencies do *not* follow the pattern of the normal curve: the number of persons superior to the mode tends to be much smaller than the number inferior. The explanation is obvious. High achievement is always due to a combination of several fundamental faculties: hence, the number of persons with exceptional artistic ability (for example) is far less than the number with average talents"; and, to support this view, he cites Seashore's figures for the distribution of musical ability.³

Similarly, Prof. Harold Davies maintains that "the Pareto law is only one example of a much more general law of inequality, which we might refer to as the *law of the distribution of special abilities*. . . . One of the strongest arguments *against* the Binet I.Q. as a measure for the higher levels, is the fact that abilities as measured by it are made to conform to the normal curve." With the Binet scale "the addition of a unit at a high level is considerably *more* difficult than the addition of a unit at a low level." On the other hand, "in playing billiards the addition of one billiard to a run of x is no more difficult than the addition of one billiard to a run of x' "; similarly, in working for an income, "it is not improbable that to add one dollar to actual income is approximately the same at each level," e.g., whether your income is \$100,000 or only \$1,000. Hence, he believes, the symmetrical curve of I.Q.'s does a flagrant injustice to the actual spread of high abilities towards the upper end of the scale.⁴

¹ These figures are based on the latest accessible returns. For earlier years, and for a discussion of the sources of information, see Colin Clark, *National Income and Outlay* (1937), p. 109 *et seq.*, and refs.

² *Economics of Welfare*, 1924, pp. 608-9. Pigou and Hugh Dalton (*The Inequality of Incomes*, 1920, p. 128) both insist that "the facts of bequest and inheritance of property" must tend to skew the curve of income still further. The same objection was urged against Pareto's claim (that the 'law' of income-distribution is the direct result of a 'biological fact') by Benini (*Principii di Statistica Metodologia*, 1906, pp. 310 *et seq.*). However, it now seems generally agreed that, although the inheritance of property must unquestionably magnify the pre-existing asymmetry in the income-curve, it cannot account for that asymmetry entirely, or even to any large extent.

³ *Capitalism the Creator* (1940), chaps. xiv. and xv.

⁴ *The Analysis of Economic Time Series* (1941), p. 427.

It seems, therefore, incumbent on the psychologist to examine more closely this general law of inequality,' which these writers propose to substitute for the normal law. Pareto¹ has expressed his 'universal law' for the distribution of earnings by a simple mathematical equation, $N = \frac{C}{x^a}$, where N is the number of persons whose income exceeds x units, and C a constant; the index or exponent, a , measures the inequality of the incomes: according to Pareto, its value cannot vary greatly from 1.5; according to the actual data it appears never to fall below 1 and seldom to be greater than 1.67.² Assuming the variables to be continuous, and differentiating Pareto's equation, we can express his formula in terms more familiar to the statistical psychologist. We obtain $y = \frac{aC}{x^{a+1}}$,

where y denotes the proportionate number of persons having an income of $\frac{1}{x}(x \pm \frac{1}{2}dx)$. Such an equation describes, not a symmetrical, but a J-shaped curve, belonging to Pearson's Type XI.³ In old schemes of marking a J-shaped distribution seems often to have been tacitly assumed: the vast majority of pupils merely 'passed'—i.e., satisfied the minimum requirements; a smaller proportion were awarded a third class; fewer still a second; and fewest of all a first; while one or two individuals, standing out from the rest, achieved a 'mark of distinction.' In the moral sphere, too, as F. H. Allport has noted, what he terms the 'J-curve of conforming behaviour' is apt to "appear in place of the chance-biological (normal) curve."⁴ Many of these distributions can be plausibly fitted by means of the foregoing formula.

But I am tempted to simplify Pareto's formula still further, and to suggest that, in the case of income at any rate, the initial value of a is approximately unity and that it is augmented to 1.5, or rather more, by various artificial circumstances, peculiar to the country or the time (e.g., the manner in which property is inherited and taxed). If this were done, the fundamental law would reduce to a simple law of the inverse square, viz., $y = \frac{C}{x^2}$; and therefore $N = \frac{C'}{x}$, or $Nx = \text{Constant}$.

To the psychologist, familiar with the text-book curves for the distributions of mental abilities, all these equations may wear an unaccustomed aspect. Yet analogous laws are by no means difficult to find in the physical world. Thus, with a gas expanding adiabatically, $P = \frac{C}{V^a}$; and the rate of decrease of pressure (P) per unit increase of volume (V) is consequently $\frac{aC}{V^{a+1}}$, where a is never less than 1, and never exceeds 1.67. If we put $a=1$ (as in isothermal expansion) we have $PV = \text{Constant}$, the equation known to every schoolboy as the formula

¹ *Cours d'économie politique* (1897), II, pp. 299-345. Both Bowley and Stamp have shown that (with certain reservations) the law is applicable to British incomes. Lord Stamp fitted Pareto's formula to the early returns of the British super-tax; and, on the strength of the discrepancies, informed the Inland Revenue authorities that they must have missed over 1,000 payers in certain classes. He adds: "They promptly went and found them!" (*Wealth and Taxable Capacity*, p. 83.)

² Most observers, however, seem now agreed that, instead of remaining relatively constant, it has (during the past half century at any rate) shown a discernible tendency to decline: cf. A. L. Bowley, *ap. Select Committee on Income Tax*, 1906; *Evidence*, p. 81.

³ For the fitting of such a type, see Elderton, *Frequency Curves*, p. 110. Elderton, curiously enough, remarks that he has "not come across a distribution really represented by Type XI."

⁴ *J. Soc. Psych.*, V (1934), pp. 141 *et seq.* What about those who do not conform, or who fail in the examination, or have incomes below the mode? These have to be treated as rare exceptions beyond the pale of the J-law: in the same way the initial rise of pressure in experiment on Boyle's law, and the extreme cases in experiments on Weber's law, used to be treated as exceptions to the theoretical curve, not as part of it. It would seem better, however, to meet the difficulty by regarding the Pareto equation as a first approximation to a Type V or VI formula: an instructive modification of this kind has indeed been proposed by one of his Italian followers (Amoroso, 'Ricerche intorno alla curva dei redditi,' *Ann. di Matem.*, II, 1925, pp. 123-60). The psychologist would probably think first of rescaling the base line by taking a logarithmic function of income, and then using the ordinary formula for the normal distribution; and, in point of fact, except for the highest incomes of all, this device has been claimed to give a very plausible fit (Gibrat, *Les inégalités économiques*, 1931): but the fit is a poor one for British incomes.

for Boyle's law.¹ The non-mathematical reader will perhaps more easily grasp the implication of the simplified expression I have proposed if he recalls the numerous examples of the law of the inverse square occurring in other fields: e.g., its appearance in measuring the attractive force of gravitation, magnetism, electric charges, heat, light, and sound, radiation, and the like, and, indeed, any effect radially and uniformly distributed from some central point. In sound, for instance, the intensity or loudness of a noise diminishes in inverse proportion to the square of the distance of the receiver from the source.

The analogies from physical dynamics are, I venture to think, not so far fetched as they may seem. In estimating the mental output of a human being or a human community, it is natural to begin by imagining a simplified working model, just as in thermodynamics we start from the notion of an ideal machine. And the calculations appropriate to such a model will naturally be expressed in terms of familiar dynamic concepts, whether or not they obey the familiar laws. Unfortunately, in discussions on what may conveniently be termed psychodynamics, owing to a confusion between the metaphorical and the strict meanings of the terms, 'capacity for work' has been identified with mental 'energy'; and mental 'energy' in turn has been identified with 'general intelligence' as measured by the usual tests. At the same time, amount of work is measured by actual output; and since, in physics, energy as capacity for work is itself measured by amount of work done on actual trial, psychologists have apparently assumed that the distribution of output (and therefore the distribution of payment for output) should follow the same law as the distribution of mental capacity, whether or not that is expressed by the Gaussian or 'normal' curve. This I hold to be a fallacy.

If I take a large number of my students, I find that, with intelligence-tests or academic examinations, the marks measuring their 'ability' conform pretty closely with the normal curve.² Yet, when I collect records of their output as psychologists in later life, I find that the frequency-curve is not even approximately normal, but J-shaped; and this holds good in many other fields of human output for which detailed data are available. May I give one simple illustration of a type that every reader can verify for himself?

Let us take the latest publication of sufficient size on educational psychology—Prof. Valentine's *Psychology of Early Childhood*—and let us study the output records of the chief workers in this sphere as shown in the index of authors. It contains just over 200 names. How great have been the contributions of these writers as assessed by the number of references to the works of each one?

An exponential law (like that of cooling or diminution of pressure with increase of altitude) yields a very poor fit. Let us therefore turn to the figures deducible from the simplified formula suggested above, viz., $y = \frac{1}{x^2} \cdot \frac{1}{\sum \frac{1}{x^2}}$ or in percentages, $y = \frac{100}{1.645 x^2} = \frac{60.8}{x^2}$, where

x is the number of references, and y the number of psychologists whose output has been sufficiently large or important to be referred to x times. The actual and the calculated frequencies are shown in Table III. Now the fit is surprisingly close.

Should frequency of reference be thought to indicate qualitative value rather than quantitative amount, it is quite as easy to procure a direct measure of individual output from the indexes of various psychological journals. In general, the exponent of x , namely $(a+1)$, hovers between 1.5 and 2.6, exactly as the simplified version of Pareto's formula requires.³

It appears evident, then, that individual output as thus assessed does not follow the normal curve, although individual ability conceivably may. But I venture to suggest that the apparent inconsistency between the two distributions vanishes directly we recognise that the functional relation between output (as effect) and capacities (as causes)

¹ Other parallels are the law relating rate of working and resistance in an electrical conductor circuit, and the laws of friction in mechanical processes. At the Ministry of Munitions, during the last war, I found that the 'output' of the heavier howitzers (number of rounds fired during its life) and the 'output' of accidents among munition workers both gave frequency-distributions conforming approximately to the formula just cited.

² Miss Harwood has recently analysed the marks of many groups of candidates sitting for two or three typical university academic examinations over a period of years; and finds that, even when no instructions are given the examiners about the allotment of such marks, they nevertheless show an approximately normal distribution, i.e., the prior attempt to admit only suitable candidates on entrance has not skewed the distribution so much as might be supposed.

³ I may add that Miss Stevenson has recently analysed a number of output-curves in this way; and further confirmed this result.

may be of many different kinds, and indeed is more likely to be indirect and complex than immediate or simple. Thus, we may willingly grant, with Snyder, that "achievement of a high sort" is the ultimate resultant of a "combination of fundamental faculties" (or abilities). But then we must go on to observe that everything really depends on *how* they are combined.

TABLE III.—FREQUENCY CURVE FOR OUTPUT IN EDUCATIONAL PSYCHOLOGY.

No. of References (x)	1	2	3	4	5	6	7	8
No. of Psychologists (y):								
(i) Actual	121	32	12	9	6	2	4	2
(ii) Calculated	122.1	30.0	13.6	7.6	4.9	3.4	2.5	1.9
No. of References (x)	9	10	11	12	13	14	15	16
No. of Psychologists (y):								
(i) Actual	3	2	1	2	1	1	0	0
(ii) Calculated	1.5	1.2	1.0	0.9	0.7	0.6	0.5	0.5
No. of References (x)	17	18	19	20-23	..	24	..	27
No. of Psychologists (y):								
(i) Actual	0	1	1	0	..	1	..	1
(ii) Calculated	0.4	0.4	0.3	0.3	..	0.2	..	0.2

Ordinarily, having assumed that the measurements for the independent 'factors' are distributed among the different individuals in accordance with the normal curve, we make the further assumption that these 'factor-measurements' combine by simple addition. Now I suggest that, where we are dealing, not with a complex mental *ability*, but with a complex mental *output*, it would be quite as reasonable (at least in many instances, though possibly not in all) to *multiply* as to add. It is a simple matter to show how this will lead from a normal curve for the components to a J-shaped curve for the products. Take factor-measurements for two factors only, and imagine that each is distributed into five classes (allotted marks of 0, 1, 2, 3, 4 respectively) and that distribution obeys the binomial law (i.e., the frequencies are proportional to 1, 4, 6, 4, 1). Combine the marks for these two factors by multiplying them instead of summing them; and then redistribute the final marks into five classes as before. We arrive at the frequencies shown in Table IV (b).

TABLE IV.—FREQUENCY DISTRIBUTION OBTAINED BY MULTIPLYING THE COMPONENT FACTOR-MEASUREMENTS.

Measurement.	Frequencies (in Percentages).	
	(a) For Each Factor.	(b) For Two Factors Combined.
0—1	6.25	49.6
1—2	25.0	36.0
2—3	37.5	10.9
3—4	25.0	3.1
4—5	6.25	0.4
TOTAL	100.0	100.0

What particular function should be chosen in any given case is a point to be determined by the concrete and empirical nature of the processes concerned, not by some abstract *a priori* principle, laid down once and for all. Thus, bodily height, width, and depth are each of them (in

the case of most animals) normally distributed, or nearly so : but, since these ' factors ' must be highly correlated (otherwise the individuals could not preserve approximately the same shape) it follows that volume, and therefore weight which depends upon volume, and pressure which depends on weight, will be estimated better by multiplying rather than by adding. This, indeed, is likely to be the case with any varying characteristic which (like measurements involving time, to take one obvious instance) has an absolute zero of its own.¹ If, for example, one of the ' factors ' is speed, industry, or retentiveness, the deviations must tend to augment those due to mere intelligent insight, by a process more akin to multiplication than to addition. Or consider the effect of blindness on the number of runs scored by one cricketer, or of doubling the speed of leg-movement of those of another : the change in score would not be correctly estimated by just *adding* the changing measurements. In short, when it comes to computing actual output, we seem to be faced with something like the converse of Weber's law : so long as we are measuring sensory *capacity* in the laboratory, we proceed from the physical stimulus to the consequent mental change, and, in so doing, we encounter the well-known phenomenon of *diminishing* returns ; but when we are measuring *output* in industry, in commerce, or in any intellectual field, we virtually proceed from mental capacity to a consequent physical change ; and there we meet with the opposite phenomenon of *increasing* returns.

The practical corollary seems plain. The tacit habit of treating the symmetrical curve of mental ability as entailing a corresponding symmetry in the curve of mental output has hitherto led us to underrate, and to underrate very grossly, the extraordinarily high output of which the super-normal child should eventually be capable. It follows that the ultimate return to the community that would be gained by investing public funds in the tasks of discovering and educating those super-normal individuals is far above what we have hitherto been inclined to expect. Every psychologist, therefore, should readily endorse the pronouncements of the few economists who have expressed an opinion on this point : " No extravagance," says Marshall, " is more prejudicial to the growth of national wealth than the wasteful negligence which allows genius that happens to be born of lowly parentage to expend itself in lowly work ; and there is no change that would conduce so much to a rapid increase in that wealth as an improvement in our schools and scholarships such as would enable the clever son of a poor man to rise gradually till he has the best education the age can give."²

IV.—SUMMARY.

Since teachers and administrators will be interested solely in the practical inferences, while psychologists will ask rather for the evidence on which those inferences are based, it will perhaps be convenient to summarise the technical arguments first, and then set down the practical outcome in as simple and non-technical language as possible.

The problem with which we have been concerned is the relations between intelligence, on the one hand, and economic conditions, on the other. All who have discussed this issue, no matter which side they take, assume that ' intelligence ' is one of the most important factors both in educational progress and in social and industrial efficiency ; but no final agreement can be reached, unless both parties to the controversy accept the same definition of ' intelligence.' By ' intelligence ' is here understood an innate factor entering in various degrees into every mental process that involves cognition—not (as some writers would suggest) any complex set of performances as measured by a recognised scale of intelligence tests.

A.—Technical conclusions.

(1) When this distinction is made, it appears that differences in ' intelligence,' defined as an *innate* factor, can only be assessed *approximately* by the raw measurement

¹ This would seem to be Pareto's own explanation. In his later work he writes : " au-dessus de la moyenne il n'y a pas de limite de hauteur ; il y a une limite au-dessous " ; and he claims that this is so both for income and for ability, as measured, for example, at ordinary scholastic examinations (*Manuel*, 1927, p. 385).

² *Principles of Economics*, p. 213. Cf. Pigou, *loc. cit.*, p. 707 : " Stupidly organised investments in children's capacities, like other stupidly organised investments, will yield little return : well-organised investments, especially investments adjusted to the natural abilities of the children affected, hold out large promise."

of 'intelligence,' automatically obtained by applying one of the recognised scales. Hence for the study of theoretical questions like the present, as well as for the practical diagnosis of individual cases, it is necessary to adjust the calculated I.Q. (or whatever mark or score is used) in the light of other relevant information, including supplementary tests of a practical type. Obviously, for research purposes, such adjustments must not be too arbitrary or subjective; nor must they beg the question at issue in the research.

(2) Measured by these adjusted I.Q.'s intelligence appears to be distributed—approximately, though not exactly—in conformity with the symmetrical 'curve of error.' On the other hand, the distribution of personal income does not present, even approximately, any such symmetrical curve, but rather a highly skewed J-shaped curve, which can be fitted by a law of the inverse square (or some low power of that order) such as could be deduced from what economists know as 'Pareto's equation.'

(3) The discrepancy can best be reconciled, not by substituting a new law of ability for the normal law, but by regarding earned income as depending mainly on output, and output as related to the contributory abilities by some special and possibly complex function. This suggestion is confirmed by observing that, in many intellectual fields at any rate, the distribution of the output itself approaches the J-shaped curve (shown by income) rather than the symmetrical curve (shown by measurements of intelligence).

(4) The particular function relating the output of different individuals to their respective abilities requires to be determined empirically for each important type of work whether scholastic or industrial. There are, however, indications that such functions will be similar to those already encountered in dealing with the work or output of physical machines.

B.—Practical conclusions.

(1) The foregoing results support the view that the wide inequality in personal income is largely, though not entirely, an indirect effect of the wide inequality in innate intelligence.

(2) They do not support the view (still held by many educational and social reformers) that the apparent inequality in intelligence of children and adults is in the main an indirect consequence of inequality in economic conditions.

(3) Nevertheless, mental output and achievement, as distinguished from sheer innate capacity, are undoubtedly influenced by differences in social and economic conditions. In particular, the financial disadvantages under which the poorer families labour annually prevent three or four thousand children of superior intelligence from securing the higher education that their intelligence deserves.

(4) The most striking instances of this are to be found at the final stage of education. With the available data a simple calculation shows that about 40 per cent of those whose innate abilities are of university standard are failing to reach the university; and presumably an equal number from the fee-paying classes receive a university education to which their innate abilities alone would scarcely entitle them.

DYNAMICS IN PSYCHOLOGY.

By WOLFGANG KOEHLER. (London: Faber and Faber, 1942, pp. 120. 8s. 6d.)

THIS small book has the qualities we expect in Professor Koehler's writings. It is concise, closely argued, and polished in statement, as simple as the subject matter permits, and every page is trenchant and provocative. It may serve as a very lucid introduction to one side of Gestalt theory, but it raises issues even more fundamental. Implicitly it is an essay on scientific method as applied to psychology, an assertion that science consists of theoretical organisation of observed facts and generalisations. Apart from their significance for a theory all facts are of equal status, and their accumulation is a display of intelligent curiosity rather than of scientific procedure. But actually the advance of knowledge presents itself as a double pulse. We have moved from the days when our books were full of theory without facts to those in which our journals are full of facts without any broad theory to unify them. Moreover, at the present time there is an overwhelming demand for applied science, and psychologists are responding eagerly. But it will be a great intellectual disaster if scientific progress is to be measured entirely by practical achievement. Society, which supports us, may rightly demand that our activities should have social value, but to push ahead with important practical inquiries while neglecting the fundamental abstract issues is a 'get rich quick' policy which is highly dangerous. The wealth of psychological research in recent years has made the need for theoretical consolidation urgent. It is true that there has been a considerable amount of speculative interpretation, but we are still in the stage of controversial schools. In this country we do not readily enroll ourselves under banners, and consequently tend to see the demerits of the schools rather than their value. We observe their limitations, their dogmatism, and their apparent blindness to the views of others. But it is easy to carry these objections too far, and it is fairer to see the work of the warring schools as convergent explorations of a vast territory, as complementary rather than antagonistic. Unification may lie far ahead, but we may hope that in a few years some writer may carry a stage further the attempt at reconciliation so brilliantly initiated by Aveling in *Psychology: the Changing Outlook*.

When we at length reach a unitary and unifying set of conceptions the work of the Gestalt psychologists will have made a vastly important contribution. We have all been profoundly affected by the breadth of their speculation and the ingenuity of their experimentation. English readers who learned of Ehrenfels from Stout are bound to be sympathetic towards their fundamental views, even though they may be reluctant to commit themselves to the wider and more detailed application of them. They will learn much from the book under review, which does not attempt to carry the argument much farther, though it includes some additional evidence. It may be taken first as a defence of the importance of theory and a statement of scientific method. Professor Koehler believes that genuine explanation is possible. The present writer remains unconvinced that we can go beyond systematic relation of phenomena, but disputes on this matter tend to become purely verbal. A more important point is his demonstration that a theory well founded upon observational data should lead by deduction to the discovery of additional facts which could have been discovered otherwise only by accident. Theory thus leads to economy of experimental effort. There are some who disdain theorising, asserting a fanatical loyalty to observed 'facts.' These misunderstand the true empirical attitude as much as they do the nature of science. Readers like ourselves, under the stress of European events, find Prof. Koehler discussing the effect of perceiving one rectangle upon the perception of another. Is this part of the furniture of the ivory tower? Read the book thoughtfully, and you will realise that the implications of these experiments may have more significance for man's future than the best psycho-technical tests we invent can ever have.

Prof. Koehler urges us to look beyond the accepted limits of our science to obtain explanatory concepts in biology and physics. He is a little impatient with those who shrink from the labour which this entails and would probably have little respect for any who objected that borrowing contaminates the purity of psychology. In particular, he has striven for a long time to bring together physics and psychology, by showing that they possess a set of common principles. He, of course, does not exhibit the rampant enthusiasm in this pursuit which others have sometimes done, proceeding always with cautious grip on detailed fact. Let us agree that there is one universe only, and that ultimately one system of laws must embrace all facts. The difficulty comes when one tries to discover identities which are more than purely formal or analogical. The writer, we understand, intends the identity to be real and decisive, and one which provides a basis for detailed scientific advance. The structure of the mental universe is like that of the physical because it is causally dependent upon it. The link is the brain, which being material *may* be describable in terms of dynamic electric fields. If then perception reveals dynamic principles analogous to those of electric fields, we have at once evidence in favour of the physiological hypothesis and an explanation of the perception. Direct evidence from the physiological side is lacking, but the psychological data may direct research on that aspect, and the results thereof not only explain the psychological, but point to new discoveries. But are we sure that, in spite of cautious care in argument, our author has not pushed ahead too fast? Is it so certain that the psychological data show more than analogies with the physical? Further, the outcome of isomorphism is surely epiphenomenalism. If the facts point that way we must follow them, but the traditional difficulties remain. I perceive the indefinite extent of the night sky and am aware of its vastness. The physiological correlate is very definitely limited in space. The two seem to be incommensurable. Then my theorising about the experience, and my criticism of the theory, are presumably dependent on other brain fields, and the resulting complications appear formidable.

The most important concept is, however, that of the field. Koehler rightly claims that so far as perception is concerned we have all been compelled to work with it, and he might have claimed still more. Whether explicitly or implicitly, we use it constantly, even though we do not recognise all its implications. When we inquire into the family background of a behaviour problem we are in fact viewing the child as responding sensitively to the field of which he is a constituent part. That sentence illustrates the difficulty in handling the concept. I have suggested elsewhere that some problems evade solution because man has not yet forged the intellectual tools necessary for the task, and this appears to be one of them. Progress has occurred by differentiating the universe into separate entities, and our success in this has created a hindrance to our appreciation of reciprocal dependence. This is manifest throughout the history of human thought, whether in relation to wholes and parts or the nature and limits of organisms. We seem inevitably to lose grip upon something when we think on these matters, and having realised the insufficiency of straight-line causation as an explanatory principle, we either reduce the variety of the universe to a homogeneous mush or take refuge in a kind of ecstatic contemplation of the whole. I have heard even competent physicists say that greatly as they respected the field concept they found it difficult to work with. But it is the great merit of Koehler (as of the other leaders of his school) that he is never content with a vague generalisation. In these pages he brings the field concept to bear upon detailed facts to provide particular explanations. Hard thinking has gone to them, and we are warned thereby that all applications of a governing concept will demand the same from us. So with a wealth of instances he argues that if neural processes are electro-dynamic in character they will create a surrounding field which will interact with other fields. What may we expect to follow from this, and does it in fact follow?

The later sections of the book are concerned with problems of memory. It appears to us less cogent than the other parts, and the author is aware that many closely related problems are left in the air. It would be unfair to charge the necessary limitations of treatment against him since it is not his purpose to write a full psychology of memory.

But the discussion assumes the truth of the 'trace' theory, and the term *trace* remains as empty as it always must until direct histological evidence is available. Until then even field theories of memory must remain ghosts. But suppose a convincing picture could be given of the physiological processes, there would still remain the question: "What do we remember, the real event or something else?" To write this off as belonging to metaphysics is to confess a scientific failure. We would suggest that another debt to physics be incurred. There will be no really satisfactory theory of memory until we have dealt as firmly with time as the physicists have done. This is a problem for scientific formulation, not for metaphysical speculation. Meanwhile, another suggestion may be made, happily of more limited goal. We must realise more fully than we have yet done that remembering is essentially subordinate to conation. The recall we study by the methods laid down in the text-books is only a by-product of biological development, an example, as it were, of the machine running without load because for the moment there is no work for it. We need to develop a new technique for the study of memory in action, and among the researches quoted in this book will be found some happy hints of the form it might take.

We are heavily indebted to Prof. Koehler for this new exposition of one of the facets of his theory. Some readers may prefer to work out the implications of field theories without at present following him in his physiological hypotheses. They will do well to adopt the same precision and rigidity of statement.

A. W. WOLTERS.

EDUCATION IN THE SENIOR SCHOOL.

Prepared by a COMMITTEE OF THE TRAINING COLLEGE ASSOCIATION, NORTH-EASTERN BRANCH. (Arnold, 2s. 6d.)

THE North-Eastern Branch of the Training College Association intended to publish this report in 1939, when, under the Education Act of 1936, the extra year of compulsory school attendance was due to begin, but the outbreak of war postponed its appearance. The widespread interest now being taken in education has, however, persuaded the Association that the present is an opportune moment for its publication. The full title of the report is "Education in the Senior School, with special reference to the 14-15 age group," and since there is a general feeling in the country that, as a first step in educational reconstruction, the school leaving age will be raised to fifteen, all those who are intimately connected with the schools will give the book a warm welcome. The problem of what to do with the 14-15 age group is one that is already exercising the minds of senior school teachers and of the staffs of training colleges and university education departments, whose task it is to train the next generation of teachers.

The general plan and content of the book is outlined below. The introductory chapter discusses the 'new' and 'old' education, and endeavours to strike a balance between them: "freedom to plan and originate," and "the achievement of a high standard of performance" are regarded by the Committee as vital aspects of the educational process in the senior school, and more especially in the 14-15 age group. The task of the senior school is envisaged in terms of livelihood, leisure and citizenship, and these three aspects of the education of the children are then discussed.

Chapter II gives a very brief account of the psychological attitudes of the adolescent, and, incidentally, offers an interesting explanation of the difference which many teachers have noticed between the boy of fourteen in the senior school and his counterpart in the secondary school. The following chapter deals with such general topics as school organisation and modern aids in teaching. The section on the school and the environment outlines the attitude of the Committee towards the content of the curriculum, and should, therefore, be carefully noted. The question of vocational training is raised, and the view

expressed that "if a vocational subject is liberally treated, it can be an avenue to as wide an intellectual world as a subject which does not find immediate usefulness in the ordinary work-a-day world."

Subsequent chapters are written by different contributors, and are devoted to suggestions for the choice of a curriculum together with some hints on methods of teaching. The headings of the chapters are as follows: The Humanities, Science and Mathematics, Art and Craft, Music, Physical Training, and Religious Education; the three subjects, English, History, and Geography are grouped together under The Humanities. The close relationship between history and geography is stressed, and the use of the wireless, the film, newspapers and periodicals is recommended so that the subjects may be both real and up-to-date. These suggestions are, of course, by no means new, as the writer is very well aware; but attention still needs to be called to such methods, as there are still many areas where no provision is made in the schools for the use of wireless or film. It is not easy to pick out any one aspect of the English section for special comment; there are many points raised that could well be discussed if space permitted. There is, however, a sub-section on language teaching which raises the question of propaganda, and since this topic is of great social importance, it seems worth while to give a few details of the writer's point of view. He says: "It is acutely important that the 15-year-old should not leave school without realising and trying to cope with the flexibility of words," he should be trained "to discriminate between the prejudiced word or the emotional word, and the word that is scientific or emotionally non-committal." The child will thus, the writer hopes, be armed against propagandists seeking to exploit his fears, hopes and prejudices by the skilful association of words. Suggestions are made for giving such training; all of them extremely practical. Readers are reminded that Professor Bartlett has a good deal to say upon this point in his book, *Political Propaganda*, which was reviewed in the *Journal* in June, 1941, and Chacotin's *The Rape of the Masses*, also deals with the same problem.

Chapter V is devoted to the place of science and mathematics in the curriculum, and to a discussion of the content of the syllabus. In each case the need for approaching the work through real data and real situations is recommended. Thus, in the science section, the writer says: "It is better to concentrate attention on applications rather than on theoretical considerations"; and in the mathematics sub-section we read: "From a psychological study of the attitudes of the senior school pupil we find that he is interested not in organised bodies of knowledge, as such, but in that which he can relate to and organise round his daily life. Hence in mathematics our units of study will not be rules and processes but areas of experience, which are worth while for the child, because they are part of his life." These quotations may perhaps suggest that the utilitarian aspect of mathematics is the only one with which senior school pupils should concern themselves, but this is not the case. The author wishes the approach to be through practical situations, but wider issues are then drawn into the discussion; and it is only the ability of the children which decides how much material shall be included in the syllabus. The writer very wisely suggests that less time should be given to mathematics in C streams than in A streams, and that only work of a practical and concrete nature should be expected of such children.

The next chapter—Chapter VI—deals with art and craft, and a few crafts are selected for detailed discussion: housecraft, wood-work, metal-work and gardening. Lack of space forbids a fuller account of the possibilities of needlework, weaving, and bookbinding.

The writer of the chapter on music insists upon the necessity for the activity of music-making, whether it be singing or percussion band or recorder playing. He asserts that in music "the effectiveness of the teaching in the senior school depends very largely on the basic training given in infant and junior schools," a statement that every other specialist would, I feel, make for his own subject! The author stresses the need for all children to have opportunities for listening to music, in order that they may learn to understand and appreciate it, but points out that careful preparation is needed for musical appreciation lessons. "Appreciation is not a gift of the senses, but a reward of the mind" is a phrase worth remembering.

Chapter VIII deals with physical education, and the book ends with a brief chapter on religious education. This chapter is the last, but is by no means the least important ; on the contrary, it sums up the work of the previous chapters : " Good training in art and craft, in literature and in music, will provide opportunities for our pupils to ' hold fast that which is good ' " ; and, again, " The curriculum finds its value and its unity in religion which is not a separate branch of instruction, and is wrongfully restricted to certain hours of the time-table." The chapter gives an account of some types of work suitable for the 14-15 age group, and concludes by saying that corporate worship in morning and evening prayers is an essential part of the life of a school.

Such is, in brief, an outline of the contents of the report.

No one who reads this book can fail to be impressed by the importance of the senior school in our social structure. Some 85 per cent of the population goes to this type of school, and it is therefore an urgent matter that the education of so large a proportion of the community shall be of the best possible quality and type, and shall be orientated towards right ends. The book has useful suggestions in almost every field of school activity, and it only remains for teachers to pick out such parts of the curriculum as seem most suited to their pupils, and which they themselves are qualified to deal with. Some specialist teachers are already appointed to senior schools by some local authorities. More will be required if work of the character indicated in the report is to be undertaken generally. The extension of the school leaving age for only one year will create a demand for additional teachers which authorities will have difficulty in meeting. It is to be hoped that before long the Government will see its way to the inauguration of a campaign urging the need for, and the social value, of, educational workers, so that the plans for an extension of educational facilities and amenities may not be delayed too long through lack of sufficient members of the teaching profession.

Some form of school leaving certificate is desirable, and should be given to all school-leavers based chiefly on school record cards. If the school leaving age is raised to sixteen it is to be hoped that external pressure, whether from parents or employers, will not succeed in imposing an external examination upon the senior schools, which have, at present, greater freedom than any other type of school within the State system. The immediate post-war years should see the senior schools experimenting freely both as regards content of the curriculum and methods of teaching. The child of to-day is the citizen of to-morrow, and upon the teaching in the senior schools the success or failure of democracy in the post-war years will largely depend.

NORA M. BARNETT.

SUMMARIES OF RESEARCHES REPORTED IN DEGREE THESES.¹

Prognostic Tests of Ability in Modern Languages.

By S. R. MILLS.

University of London Institute of Education, 1942.

Synopsis of Thesis presented in part fulfilment of the requirements for the Degree of M.A. in Education in the University of London.

THE principle aim of the investigation was to devise tests of aptitude for Modern Languages. The subjects of the experiment were fifty boys, who had all completed two years of French, and the criterion was obtained by combining the scores on 'new-type' objective tests of (1) Vocabulary, (2) Grammar, (3) Dictation, (4) Oral Fluency, (5) Aural Comprehension, and (6) Written Comprehension, designed to cover the work of first two years of the school course. Prognostic tests of an analytic type were used in preference to the more usual miniature or complex type, since (1) they are more suitable for children of the age of 11+ to whom any resulting battery might be administered, and (2) a subsidiary aim of the experiment was to find out what psychological factors entered into the ability. The prognostic tests given were: (1) Word Association I (write words connected with certain stimulus words, e.g., 'house,' 'coal'), (2) Word Association II (e.g., write three-syllabled words, words ending in -ly, etc.), (3) Word Invention, (4) Anagrams, (5) First and Last Letters (e.g., write words beginning and ending with s-l), (6) Thorndike Test of Word Knowledge, (7) Derivatives (English derivatives of certain French words, whose meaning was given), (8) Auditory Span, (9) Disarranged Sentences (administered orally), (10) Rote Learning of Nonsense Syllables, (11) Visual Span, (12) Vocabulary Learning (Russian words and meanings) tested after one hour, (13) Ditto after eight days, (14) Ditto after eleven weeks, (15) Simplex Intelligence Test. All these were given as group tests in controlled conditions during four testing sessions, which, together with the Criterion Tests, lasted seven hours in all. The personality traits chosen were: (1) Emotionality, (2) Talkativeness, (3) Extraversion—Introversion, (4) Perseverance, (5) Alertness, (6) Originality, and (7) Speech. These were measured by means of graphic five-point rating scales, and estimates were obtained from five raters to whom the boys were all well known.

After an inspection of the correlations, tests Nos. 4, 10, 13 and 14 and rating scales Nos. 1, 2 and 3 were rejected for various reasons. From among the remaining tests and ratings seven different batteries were selected. Their regression equations were evaluated, and it was found that the multiple correlations ranged between .792 and .75. Those pupils whose prognostic and criterion scores showed wide divergence were given special attention, and school records and personal history were of some use in explaining these anomalous cases. Owing to the war it has been impossible to try out these tests on a fresh group of boys before they actually start the French course. However, the analytic type of prognostic test used is less susceptible to the effect of actual achievement than the miniature, complex or 'rapid-learning' tests. There is also good indication of the prognostic efficiency of the tests in the fact that the correlation between the scores of twenty-six of the boys, as given by the first regression equation (i.e., the one composed of eleven cognitive tests), and a further criterion of the ability, obtained two and a half years later (School Certificate marks), was found to be .73. The subsidiary aim of finding the factor pattern of the tests and ratings was less successful. Apart from the two general factors involved in the batteries of cognitive tests and personality ratings respectively, the factor associated with the tests of verbal fluency was the only one which entered into the criterion, and that only to a very limited extent.

Thus the results would seem to indicate that analytic tests may form as effective batteries as those of a more complex type. Some of the smaller batteries show that a large number of such tests is not necessary in order to obtain multiple correlations of decided value. The batteries involving ratings are interesting because they illustrate the effectiveness of certain personality trait ratings in modern language prognosis (provided they are taken together with an intelligence test). Finally, the brief examination of certain pupils' records show that there is considerable scope for further investigation of personal factors which were not involved in the tests and ratings.

¹ These Outlines must be submitted through the Head of the Department in which the research was carried out.

Some Investigations concerning the work of a Central School in relation to the future occupations of its pupils.

Thesis accepted in part qualification for the M.Sc. Degree, Birmingham University, 1933.

By A. D. HAWKINS.

The broad aim of these enquiries was to find out how far a particular central school is justified in its policy of giving a certain amount of definite vocational training to its pupils, according to the probable occupations which they hope to take up on leaving school. The policy was judged according to two of the many inherent dangers in early specialised training, namely, (a) whether sound and suitable choices of occupations are being made, and (b) whether the training being given is likely to be actually used on leaving school.

The investigations were carried out in a mixed selective central school for children from eleven to fifteen or sixteen years of age in an industrial area in the Midlands. The course of instruction is broad and general during the first two years. The scholars make a provisional choice on an occupational basis at the end of the second year. In the third and fourth years certain subjects of a definite vocational nature are introduced, the bias being more marked on the commercial than on the industrial side.

The number of present scholars was 256 (133 girls and 123 boys); the old scholars from whom information was obtained numbered 250 (107 girls and 143 boys).

The investigations among the present scholars included the administration of an intelligence test (Spearman's "A Measure of Intelligence for Use in Schools" was used); obtaining, by means of a questionnaire, information concerning the occupational preferences of the pupils with reasons for their choices; enquiries concerning the parents' vocational plans for their children. The information required from old scholars was obtained by questionnaire.

The evidence suggests that the pupils, boys and girls, tended to choose occupations higher in grade than those for which their general intelligence fits them; the girls were more at fault in this respect than the boys; those scholars below normal intelligence tended to choose far more unsuitable occupations than those above normal; pupils in senior forms showed no appreciable superiority over the school as a whole in choosing occupations suited to their general mental level; and on the whole occupational preferences appeared to be based on reasons which were unsound and likely to lead the pupils into unsuitable work.

The evidence also suggests that the percentage of the present scholars desiring to enter all the kinds of work mentioned by them, with the exception of factory work (and also engineering in the case of the boys), far exceeded the percentage of openings which the old scholars had been able to obtain in those kinds of work; that many would probably accept factory work, although practically none of them choose it; the scholars tended to choose occupations of a higher grade than they were likely to enter. Most of the old scholars included in the investigation had not been able to exercise much choice in taking up occupations, and would seem in very many cases to have taken work of a grade much below that for which they were suited. Over three-quarters of the old scholars stated that they took the first job offered to them, and less than one-fifth said they have had the opportunity of definitely refusing to take a post.

Probably the simplest, but most effective, criticism of the vocational training work of the school is that most of the old scholars themselves said that the training given had not been of use to them.

Thus among the old scholars only 15 per cent of those who had received some instruction in shorthand made any subsequent use of it; in the case of typewriting, only 30 per cent, and book-keeping only 25 per cent. More than half of the boys who had received training in engineering drawing stated that it had not been used in their subsequent work. The utilitarian value of French in this school was negligible.

There appeared to be an urgent need for vocational advice and guidance among these pupils.

BOOK REVIEWS.

Basic Problems of Behaviour: By MANDEL SHERMAN. (Longmans, 1941, pp. vii+440, 18s.)

This book is an elaboration of the author's *Mental Hygiene and Education*, published in 1934. It gives a fairly comprehensive account of different psychological and psychiatric theories of behaviour problems, and illustrates these theories by clinical and experimental evidence.

The first chapter deals with the emotions, and short accounts of the James-Lange, the behaviourist, and MacDougall's theories are given. Fear and anger are dealt with in more detail than other emotional reactions as these often give rise to problems of maladjustment. Motivation and frustration are next dealt with, and experiments are described that show the effect of these on the learning process, on emotional reactions, and thereby on personality. This leads to a discussion of theories and measurement of personality. The views of Allport, Freud, Jung, Adler and others are summarised and accounts of their methods of assessment of qualities given. A further chapter discusses compensatory and symbolic behaviour, aggression, withdrawal and phantasy as methods of adjustment. Attitudes, conflicts, delinquent behaviour, neuroses and mental abnormalities are the subjects of other chapters.

The accounts of the different types of maladjustment are clear and illustrations and evidence are taken from a wide field. Many of the problems described are drawn from social conditions peculiar to America (e.g., conflicts of half-castes and attitudes to negroes are discussed), but others, such as the incidence of delinquency in different social groups, and the conflicts that give rise to it, are probably also applicable to England. The author gives an impartial account of widely different theories, and the reader is constantly referred to books and articles by other investigators. A useful bibliography is appended.

The book is an interesting and clear account of behaviour problems and their causes, though ways in which such problems can be avoided or solved are not shown so clearly.

M.C.P.

The Education of the Ordinary Child: By JOHN DUNCAN. (Nelson, pp. 240. 15s.)

Teachers in senior schools, and especially those whose work lies amongst the less able groups of children, will find much of interest in this book. John Duncan is the Head Master of Lankhills Special School, a residential school provided by the Hampshire Education Committee for mentally defective boys and girls. For many years Mr. Duncan has kept careful records of the work of the children in the school, and a great deal of experiment both in subject matter and in methods of presenting material has been carried out; the standard of work achieved by the children is remarkable.

The first part of the book deals with topics of general interest and with the principles underlying the detailed schemes of work which occupy the remainder of the book. In referring to these schemes the author is careful to say that they are intended to be suggestive only and not comprehensive, and that they have been included in detail for two reasons: (a) to illustrate the theories and generalities developed in the first part of the book, and (b) to satisfy the demand for schemes of work which he receives from so many quarters.

Chapter IV described some tests of intelligence both of the verbal and non-verbal type; it is extremely interesting to find so great a difference as that between the mean I.Q., which was 66, and the mean P.Q. (Practical Quotient, Alexander's Performance Tests) of 96. Speaking of this result the author says: "The high gF abilities of these so-called defective children indicate the possibility of high educational attainments in work in which these abilities are used. Further, as g is a common factor in both gv and gF tests, these results appear to indicate that the deficiency among very many of these so-called mentally defective children is verbal rather than general." The result is certainly sufficiently striking to make one desire to find out whether other schools of a similar type have found the same result.

In many of the modern senior schools practical activities arising out of the interests of the children are made use of in introducing new work, and the author's suggestion that the ordinary child should be taught less through verbal means and more through real life situations, is, in fact, being put into effect, but the suggestion that this should be done cannot be stressed too often, and the schemes put forward in this book should be of great value to those who feel that the old academic approach is not satisfactory, but who do not know how to set about teaching on the new lines.

N.M.B.

From Thirty Years with Freud: By THEODOR REIK. (London: The Hogarth Press and the Institute of Psycho-Analysis, 1942, pp. 214. 12s. 6d. net.)

Dr. Reik's latest book has now been translated and readers of his earlier books may be disappointed with it. The subject matter of the book falls into three divisions: Freud and His Followers, Freud as a Centre of our Culture, and Essays on Diverse Subjects. The first of these gives some interesting glimpses of Freud, and throws some light on his personality, but nothing of real importance seems to be added to our knowledge of him. In the second and third sections are selected lectures and essays of the author's. The whole book reveals the influence of Freud on the author during the long period of collaboration indicated in the title, and also some of the latter's reactions.

Groundwork of Educational Theory: By JAMES S. ROSS. (London: George G. Harrap and Co., Ltd., 1942, pp. 264. 6s. net.)

This book is intended to be a companion volume to the author's earlier and very successful *Groundwork of Educational Psychology*. The writer is concerned chiefly to try to meet the needs of students preparing for the teaching profession, and therefore the book is a simple "first discussion of the principles and practice of education from a broad philosophical standpoint." His long experience in training teachers has convinced the author that such a treatment seems to be necessary. Within the limits thus imposed the book should meet the needs of the students and should also appeal to many who have perhaps not given as much attention as they might have done since their training days to the need for "a clearly formulated philosophy of life and of education."

The book opens with a chapter on Philosophy and Education, followed by discussions of Social and Individual Aims in Education and The Philosophical Problem. A chapter is devoted to each of Naturalism, Idealism and Pragmatism in Education. Then follow interesting sections on Freedom and Discipline, Intellectual Discipline, and The Curriculum, and the book ends with two chapters on Realism in Education and Religion in Education. The volume covers much ground, the treatment is definitely expository and elementary. Suggestions for further reading are appended to each chapter.

A Practical Method of Self-Analysis: By E. PICKWORTH FARROW. (London: George Allen and Unwin, Ltd., 1942, pp. xv+153. 6s. net.)

This title, well-chosen from the point of view of selling appeal, is continued on the wrapper thus: "Enabling anyone to become deeply analysed without a personal analyst. An entirely new kind of autobiography. Completely forgotten incidents of very early childhood were recalled, the earliest from the age of six months, together with their load of painful emotion. Their recovery relieved the author from influences which had been hampering his life. He also recounts his experiences with two psychoanalysts."

The author has given us an interesting account of his general method of procedure and his courage and perseverance must be acknowledged. His scientific interests and abilities have been of very great value to him in this long and arduous research. But one is left in considerable doubt about very many important issues and one would not hesitate to say that the use of this method is not likely to enable anyone to become deeply analysed without a personal analyst.

Young Offenders: An Enquiry into Juvenile Delinquency: By A. M. CARR-SAUNDERS, HERMANN MANNHEIM, and E. C. RHODES. (Cambridge University Press, pp. x+168, 7s. 6d. net.)

This is a report of an extensive enquiry into the main environmental facts distinguishing the delinquents from young people who come from similar homes but who have not come within the official notice of the law. The authors state that a corresponding psychological investigation was not possible owing to the outbreak of war. Nevertheless, in spite of the serious limitation on the psychological side, the report is of great value.

The enquiry, which was confined to male offenders, dealt with one thousand cases brought before the Juvenile Courts in London after October, 1938, and a similar number in the cities of Manchester, Leeds, Sheffield, Hull, Nottingham, and Cardiff. Corresponding to each young delinquent a non-delinquent was selected by the head teacher of his school who was of about the same age and might reasonably be regarded as a control case. (There would, however, probably be a tendency for the head to pick exemplary boys.) The age range was from eight to sixteen.

The present reviewer has discussed some of the main findings in an article in the present number of this *Journal* (pp. 63-65). Here the other results will be described more briefly, together with the main plan of the research. The first analysis was concerned with what the authors call the 'normal' family compared with broken homes. The latter included also homes to which there were various older relatives added. The proportion of delinquents coming from 'normal' families was 67 per cent, that of controls 80 per cent. The main fact emerging here, writes Mr. Rhodes, is that a large proportion of delinquents belong to quite ordinary families (p. 63).

The authors now proceed to add to their conception of the normal family the following characteristics: good health of both parents, regular and exemplary habits of parents, absence of undue friction between the parents, normal disciplinary attitude towards the delinquent or control, neither over-strict, nor too indulgent, neglectful or variable.

In this last respect there is a decided difference between the delinquents and the controls. In less than 60 per cent of the delinquents' homes was the disciplinary attitude normal, whereas the figure for the controls was about 88 per cent.

Taking again only homes of normal atmosphere the investigators enquire as to any difference produced by the accessibility of recreation facilities near the home. In London this seemed to make little difference between the delinquents and controls, though in the provinces the greater proportion of the controls appeared to have easier access to recreation facilities than had the delinquents. As to the London figures, it should, however, be borne in mind, I suggest, that it is the children in bad homes for whom we should expect recreation facilities to make a real difference. Regular employment among

the fathers of the controls was also somewhat greater than for the delinquents, the figures being: controls, average 80 per cent, delinquents just over 70 per cent. Again the difference was not very great even as to the number of mothers who go out to work. In the provinces this difference was hardly noticeable—7 per cent for the controls, 9 per cent for the delinquents. For London the figures were 9 per cent for controls and 15.9 per cent for delinquents.

Coming to a closer study of the youths themselves, we take the figures for school reports, again considering only homes where the atmosphere, as measured by the health and relations of the parents, was normal. Confining ourselves to these homes with 'normal atmosphere' we find the striking result that there are hardly any boys who had 'bad' conduct reports at school, even among the delinquents—less than 1 per cent for delinquents in London and under 4 per cent in the provincial towns. But only one boy among 990 controls had a bad conduct report—evidence that these controls were a very special selection. As to attainment for the given age at school, the difference is appreciably greater, 'below normal' covering 25 per cent of the delinquents but only 9 per cent of the controls.

We have not space to state the main results of a later section giving an analysis of the types of crime. But mention must be made of the useful summary by Mannheim of previous investigations given in the first chapter and of the interesting general discussion in the last chapter.

As already indicated, the book makes no pretence to give fundamental psychological analysis and one feels how inadequate is any treatment of delinquency which has not a full discussion of innate tendencies and individual differences.

I hope it will be taken more as a compliment than as a criticism if I say that a supplement to the present book would be welcome, dealing with the material in a different way.

The main method, indicated above, is summarised in the last chapter (p. 148): "We have contrasted families of normal structure with 'broken' families; then concentrating upon the former we have contrasted normal families of normal home atmosphere with normal families of abnormal home atmosphere; subsequently we have analysed the normal families of normal home atmosphere. In this fashion it is possible to attempt to isolate the effects of particular aspects in the environment of the cases."

Unfortunately this leaves some of the most important and interesting questions unanswered; for example, the absence of club membership may be much more important for youths coming from bad homes than it is for those in normal homes. What one would like to see therefore now is a series of corresponding analyses of those who came from homes *without* the normal atmosphere.

C.W.V.

Education for Leisure: By GEORGE H. HOLROYD, M.A., with a Foreword by Professor Frank Smith, M.A., B.Sc., Ph.D. (Leeds: E. J. Arnold and Son, Ltd., pp. 164, 7s. 6d.)

The main value of Mr. Holroyd's most recent book lies in the conclusive evidence it affords that modern principles of education, as widely neglected as they are advocated, can be put into practice, given an imaginative teacher with sufficient energy and enthusiasm to make the necessary effort in and out of ordinary school hours. Mr. Holroyd's practice is an application of the two principles that "education should be for living" and not for livelihood, and that the schools should provide, in addition to the necessary elementary skills, opportunities for the communal development of those activities which can be continued after school to fill the leisure of adolescent and adult life.

Though written with special reference to the senior school, the book includes a short section on the junior school and a longer one on voluntary youth organisations. As Mr. Holroyd's suggestions are based on his own very wide experience, they are as practical as they are stimulating. Of the sections relating to specific studies, the chapter on music and the sub-sections dealing with drama and geography are especially good. Incidentally, it is with considerable shock that one reads, in the section on history, that "the natural correlation between history and geography has very rarely been even noted."

The book has many references and an index.

J.M.

Child Art: By WILHELM VIOLA. (University of London Press, pp. 204, 15s.)

Dr. Viola's fascinating exposition of Franz Cizek's humanistic philosophy and of his methods of developing child art might be read with advantage and pleasure not only by those specifically interested in the subject but by all responsible for child life generally. From the first chapter, in which are described Cizek's efforts to open his first juvenile art school in 1897, to the last eighty pages, where one almost hears the voices of Cizek and his 'under tens' in the classroom itself, with its "cheerful atmosphere of laughter and intense work, of chattering and concentrated production," the reader is kept in intimate relation with Cizek himself, and with the creative and imaginative world of the child, which its art expresses until sophistication and realism veil his fantasy.

The middle section of the book, Chapter X, consists of answers to 300 questions selected from those asked of Dr. Viola at lectures during many years. These, together with the excellent illustrations, which include twelve plates, and the final section on Cizek's "lessons" covering a period of eighteen months, provide an invaluable and practical guide to any who would apply these methods.

This well-produced and indexed book is therefore as practical as it is inspiring.

J.M.

Predicting the Child's Development; By W. F. DEARBORN and J. W. N. ROTHNEY and Others. (Cambridge, Mass.: Sci-Art Publishers, 1941, price \$4.50.)

The aim of the 'Harvard growth studies' has been to investigate the development of children by means of what is called the 'longitudinal' method as distinct from the 'cross-sectional,' i.e., by re-measuring the same children year after year instead of measuring a different set of children for each different age. The third of these studies was started in 1922. At the outset all the children entering the first grade in three Massachusetts schools during that year (3,592 in number) were chosen; and, so far as it was possible to keep in touch with them, their physical, mental, and scholastic characteristics were examined annually. Complete records extending over twelve years were obtained for 320 children; and the results are analysed in the present volume.

In the curves for physical development one of the most striking features discovered was the well-marked spurt appearing at what the authors call the 'maximum growth period.' It proves to be far more abrupt than has hitherto been supposed; curves based on cross-sectional studies were almost bound to smooth out such effects, because different individuals show the spurt at different ages. In general, it is found that the maximum growth period "coincides with the advent of the menarche in girls and of pubescence in boys"; and the writers suggest that it is probably one of the best available indications of impending adolescence.

The correlations between the eight physical measurements are of great interest. The authors do not attempt any formal factor-analysis; and content themselves with demonstrating that the crude proposals to classify individuals into two 'bodily types,' by means of rough criteria such as those proposed by Kretschmer and his followers (e.g., ratio of height to weight), find little justification in actual fact. "The difficulty," as they say, "lies in determining just when one type ends and another begins." Such a difficulty can only be overcome by the use of a factorial method. I have ventured to factorise their table of correlations (Table 64, p. 301, 533 boys, aged 16). The results yield three significant factors, having the saturations shown below:

Factor.	Standing Height.	Leg Length.	Sitting Height.	Trunk Length.	Chest Depth.	Chest Width.	Iliac Width.	Weight.
(i) . . . . .	.92	.60	.89	.83	.58	.67	.74	.90
(ii) . . . . .	.44	.22	.27	.19	-.29	-.31	-.15	-.37
(iii) . . . . .	.31	.56	-.28	-.54	.07	-.07	-.04	.04

The figures reveal a remarkable agreement with those obtained from English children. (i) They plainly contradict the common assumption (explicitly adopted by Spearman and others) that there is no general factor underlying physical measurements analogous to the general factor found with mental tests. (ii) They show a clear factorial basis for the distinction between the leptosomic (asthenic) and brachysomic (pyknic) types. (iii) Further, standing height appears to be largely dependent on leg-length, and sitting height on trunk-length. (iv) Of single measurements, height and weight are the most suggestive for assessing both the general factor and the Kretschmerian type-factor, though, as Dearborn and Rothney have argued on other grounds, they would by themselves have a very poor diagnostic value. It would be interesting to know whether an examination of the annual records would show that boys they call D and E, for example (two obvious pyknic types), and G (an asthenic type), have always exhibited the same type-tendencies as suggested by the measurement taken when they were sixteen.

To fit the curve of mental growth the authors finally adopted the Gompertz formula (suggested by Courtis in American and used in this country by Richardson and others). At first sight, as they observe, their conclusions differ rather widely from those of Thurstone, who based his inferences on an analysis of Binet results obtained with 3,000 London children (published in *Mental and Scholastic Tests*). Dearborn and Rothney, however, point out that, if Thurstone had taken as his unit the variability of the 8-year-old Londoners, instead of the 3-year-old, his results would have been very much the same as theirs. On the basis of their curves, they deduce that mental growth, so far from stopping short at 15 or 16, must continue (though with a rapidly diminishing rate) up to about 30 years: "approximately 2 per cent of mental growth may take place after the age of 21." Actually, however, their figures could be fitted almost as well by a logistic curve; and this would obviously show a less abrupt rise during the earlier years of life and would indicate a much earlier arrest.

Between a child's speed of physical growth and his scholastic achievement they can find no significant relation either positive or negative: rapid growth is not accompanied by rapid school progress, nor (as others have maintained) does it temporarily inhibit it. Nevertheless, "at every age, those girls and boys who reach maximum growth period early tend to be brighter than those who reach it later"; and, both physically and mentally, "the growth impulse is more intense in the early maturing groups than in the late maturing groups."

Against the current tendency to rely on a simple I.Q. as a final measure of 'intelligence' they rightly register strong protests. As they remark, "in the minds of many of the makers, intelligence tests were designed to determine innate differences in intelligence, and not to be affected by environmental influences"; yet, beyond question, "socio-economic conditions do influence intelligence, as the

commonly used tests of intelligence test it." They suggest that this influence is probably strongest during the pre-school period, and may be partly neutralised later on by the uniformity of school conditions. Thus, between the ages of 8 and 12 the I.Q.'s of their children have remained moderately constant; but before school age and during adolescence the I.Q. is a highly unreliable measure. In its place they propose to substitute the percentage of the maximum growth reached at the age of testing.

The whole elaborate investigation has been admirably planned, industriously carried out, and most carefully reported. Its general outcome has far-reaching implications. We now have a clear demonstration of what many have for long suspected, namely, that both physical and mental development are highly individual characteristics, with features peculiar to each particular child. This is especially true during adolescence. Consequently, the customary methods of prediction, based on averages or 'norms' for successive ages, obtained by the usual 'cross sectional method,' appear liable in individual cases to lead both the teacher and the educational psychologist very far astray.

C.B.

The Training and Teaching of Adult Workers: By PHILIP E. VERNON. (University of London Press, Ltd., pp. 48. 2s.)

Dilution of labour and the demand for technical proficiency in the Armed Forces have thrown great emphasis on a neglected aspect of teaching. The training of adults in narrowly specialised skills has had to be done largely by men and women whose personal knowledge of the job to be taught is extensive, but whose experience of the art of instruction is slight. To this problem Dr. Vernon has brought a wide knowledge of teaching method and of vocational psychology. This, supplemented by a special study of the working methods of certain units of the Army and other forces, is the foundation of the present pamphlet.

In non-technical language he gives a survey of the whole field of research into the psychological problems of industry as they affect training. Tests of intelligence and of special abilities are illustrated and the technique of motion study outlined. He sets against this background the individual worker, insisting upon the importance of personality and of emotional adjustment both to training and to the industry he is to serve. The writer discusses the psychology of the acquisition of skill, showing how to adapt in practice what has been learnt by many investigations. The size of classes, the building of a syllabus, methods of delivery, the use of notes and visual aids and many other topics are dealt with and advice is given which even the experienced teacher cannot afford to neglect. And to a lucid text the author adds some telling diagrams and illustrations.

The skilled man suddenly faced with the unfamiliar task of passing on his skill will find himself saved by this book from many painful blunders; and there are few, however long they have been training adults, who will not find themselves stimulated to consider some fresh problems and try out some new methods.

W.D.W.

Club Leadership: By BASIL L. Q. HENRIQUES. (Oxford University Press, 1942, pp. xv+256, 5s.)

This is the third edition of a book which has established itself as an authoritative discussion of the main problems of boys' clubs. It is the work of a man who is at once evidently an able organiser, a great lover of youths, and one who has a profound understanding of their needs; it is the work also of a writer who thinks clearly, is not led astray by his genuine enthusiasms, but keeps to careful and critical discussion.

The chapters, according to the writer, can be read in any order independently. At the same time the book does reveal a decided unity of purpose and of thought. We would specially commend the chapters on Understanding the Boy, Leadership, Sex; but the more practical humdrum side of youth clubs is also dealt with; for example, premises, types of activity, office routine, finance and co-operation with outside bodies. Indeed, the book would justify a wider title than the one given to it, and we can recommend it thoroughly to all interested in the Youth Movement.

Two points on which the author takes an individual view may be mentioned: (1) that a boy should join some youth club about a year before leaving school in order to get used to it before the big break in his life; and (2) that there should be separate clubs for the age groups of about 13½ to 15½ or 16, and 16 to 19.

The Child and the Magistrate: By JOHN A. F. WATSON. (London: Jonathan Cape, 1942 p. 207, 10s. 6d.)

The author of this book is the Chairman of the Southwark Juvenile Court, and the book is the result of years of experience in the Courts, of a lively interest in human nature, and of a deep sympathy with children brought up in bad homes and sordid environments. It makes extraordinarily interesting reading, and few, even among those the most experienced in dealing with juvenile delinquents, could fail to learn much of value from it. This remains true, although the author's treatment is not always what would satisfy a scientific investigator or statistician.

We should particularly emphasise the recommendation of the Lord Chief Justice in the Introduction that every magistrate who sits at the Juvenile Court should study the book. The technique in the

handling of different types of delinquents is itself well worth studying, as are the pros and cons for different kinds of treatment, whether 'binding over' or probation at home or boarding out in institutions or sending to approved schools and so forth. Throughout there gleam flashes of humour which make one feel that it would be a pleasure to sit in a court and listen to the author administering justice or dealing individually as he often tries to do with the young delinquents. We cannot resist quoting one compliment paid to the writer by a mother who, after her child had been before the court, wrote to him as follows: "Me and my husband wishes to thank you, Sir, for acting like a gentleman and not like a magistrate."

Nursery School Education and the Reorganisation of the Infant School: By OLIVE WHEELER, D.Sc., and IRENE EARL. (University of London Press, 1939, pp. 169. 5s.)

This comprehensive survey of the Nursery School Movement should be a useful guide not only to teachers but to parents and all who are interested in the well-being of children. It is well illustrated, and though simply written its conclusions are always based on sound psychological bases, quoting always the opinions and findings of all the leading psychologists and educational researches. A short survey of the development of the nursery school ideal from the infant school founded by Robert Owen in 1816 will be of interest to the student and the historically-minded.

The first part of the book deals with underlying principles—the basic needs of the child and his development during the first few years, the significance of play and the relation between home and school. The second part deals with procedure in the nursery school, and will be a valuable guide to young teachers. Suggestions are given for suitable activities not only for 'under-fives' but for the 'older infants,' and what is called the 'pre-lesson stage in number' forms the subject of a helpful last chapter. In view of the growing tendency to desire an extension of nursery school methods the authors might well consider an addition to their useful work in the form of a further book on the nursery infant school.

L. E. S.

Science and Education: By S. R. HUMBY and E. J. F. JAMES. (Cambridge University Press, 1942, pp. viii+145. 3s. 6d. net.)

This is a recent addition to the *Current Problems* series, and it maintains the high standard set by its predecessors. It is worthy of note that a book bearing this title and written by science masters from one of the oldest of our public schools, finds its way into this series. In five chapters the authors deal lucidly with the topics: Science and Society, Science in Our Schools, The Past and the Present, The Content of Science Courses, The Problems of Presentation, The Teaching of Scientific Method. Science teachers will read the volume with critical interest; teachers of other subjects may learn something of the ideas and aspirations of colleagues who spend most of their time in laboratories; those concerned with curriculum planning may save themselves from some common errors of judgment, to put it mildly. The writers' point of view may be summarised in their closing words: "We must send out our pupils strong in the confidence that they can themselves do something to make the world a better place under conditions in which, for the first time in history, man has great enough control of material things to bring the good life within the reach of all." The limitations of the scientific attitude must be sought elsewhere.

The Early Development of Number Concepts. (University of London Press, 1s.)
Publications of the Scottish Council for Research in Education—XX.

The book deals with the arithmetical background of children entering school, and gives a brief review of previous research into the subject, with an excellent bibliography. Then follow full details of a questionnaire that was circulated to infant teachers in all the counties of Scotland and in the four cities of Aberdeen, Dundee, Edinburgh and Glasgow.

The results for each item of the test are carefully and clearly tabulated and certain general inferences are made: some of these may cause surprise, and should stimulate infant teachers to consider again, critically, the methods of approach to number teaching that have become traditional.

At the end of the book there are three brief but interesting sections on number situations, number games, and number pictures, and the whole is not difficult reading even for those with a limited knowledge of statistical method.

NOTE.

A Biological Introduction to Psychology: By R. J. S. McDOWALL.

We regret that owing to a printer's (thoughtful) alteration in the review of this book in our last number the author was described as "the Professor of Psychology" instead of "the Professor of Physiology," King's College, London.

AN ANALYSIS OF THE RECORDS OF SOME 750 PROBATIONERS.¹

By E. W. HUGHES.

I.—*Introduction.* II.—*Ages of probationers.* III.—*Periods of probation and success of application of the Act.* IV.—*Home conditions.* V.—*Occupation.* VI.—*Personal traits.* VII.—*Analysis of cases of failure.* VIII.—*Summary and main conclusions.*

I.—INTRODUCTION.

THIS article is based upon statistics obtained from the analysis of the individual records of some 750 male probationers in the City of Coventry. I am greatly indebted to the Senior Probation Officer, Mr. J. Marshall, and the Probation Committee for access to these records and for help very generously given in the compilation of the data.

The records consist in the main of the probation officer's 'preliminary report' and the results of the periodic visits which are made in connection with the case. The preliminary report on the offender and his environment is compiled before sentence, and it is largely on the impression gained from this statement that the magistrates are able to decide whether the offender is suitable for treatment by probation methods or not. The small entries made as the period of probation proceeds are of great value, and occasionally lead to a reversal of early impressions as more evidence comes to light. With the aid of the information collected in this manner the probation officer is able to give a reliable estimate of the person and the effects of the supervision.

The control groups in this analysis consist partly of 'old offenders' and those delinquents treated by methods other than probation; but, in general, contrasts are made to measure the effect on the course of the treatment of the presence or absence of certain of those unfavourable conditions established as of prime importance in the causation of delinquency.

II.—AGES OF PROBATIONERS.

The ages of the probationers are distributed in a curve with a peak at 13 years or thereabouts, and a heavy concentration (574 out of 745) in the age group 8 to 17 inclusive.

This distribution may indicate the manner in which probation treatment has been applied in the varying age groups. In order to investigate this possibility, the court sheets for all indictable offenders for January, 1938, to October, 1939, were examined, and the percentage put on probation in each age group was calculated. By smoothing out the irregularities of the curve it was found that there was a decided tendency to apply probation almost exclusively to young offenders, with a definite decrease in its application as the age of the offender increased. This is, perhaps, a natural tendency, and, coupled with the impressions gained from the title of the 1887 Act, namely, Probation of First Offenders' Act, has led to erroneous ideas upon the use of probation treatment. The actual intentions were that probation should be applied to cases decided upon, "Character, antecedents, age, health or mental condition of the person charged; or to the trivial nature of the offence."²

The results of a Home Office enquiry during 1933-36³ showed a tendency for an increase in the success of probation methods with age. The corresponding figures shown for Coventry indicate a similar tendency, although the differences are hardly significant. It must be understood that the verdict 'satisfactory' merely means that the Probation Committee has not been able, or inclined, to call the offender before court again. The Probation Officer himself may have been quite dissatisfied with the conduct of the probationer. Again, many offences remain undetected, and the term satisfactory makes no allowance for these.

¹ Outline of Thesis accepted as part qualification for the M.A. Degree in Education, University of Birmingham, 1942.

² *Directory of Probation Officers*, p. iv, Introduction.—H.M. Stationery Office, 1939.

³ *The Probation Service: its Objects and its Organisation*, p. 13.—H.M. Stationery Office.

Diagram I.

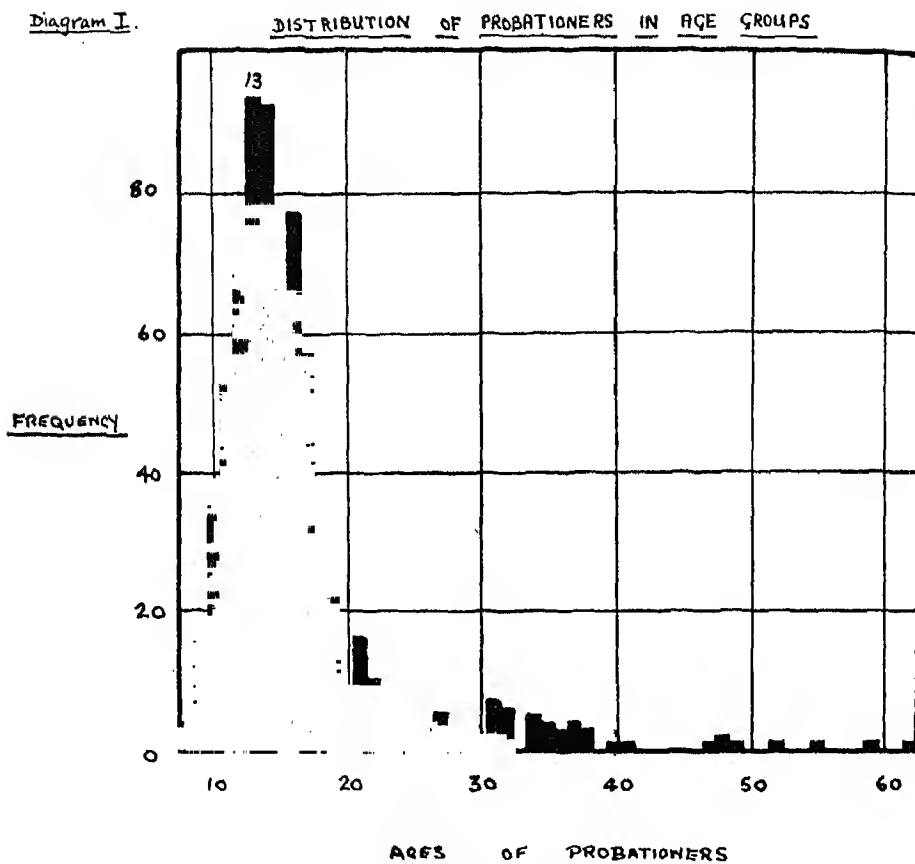
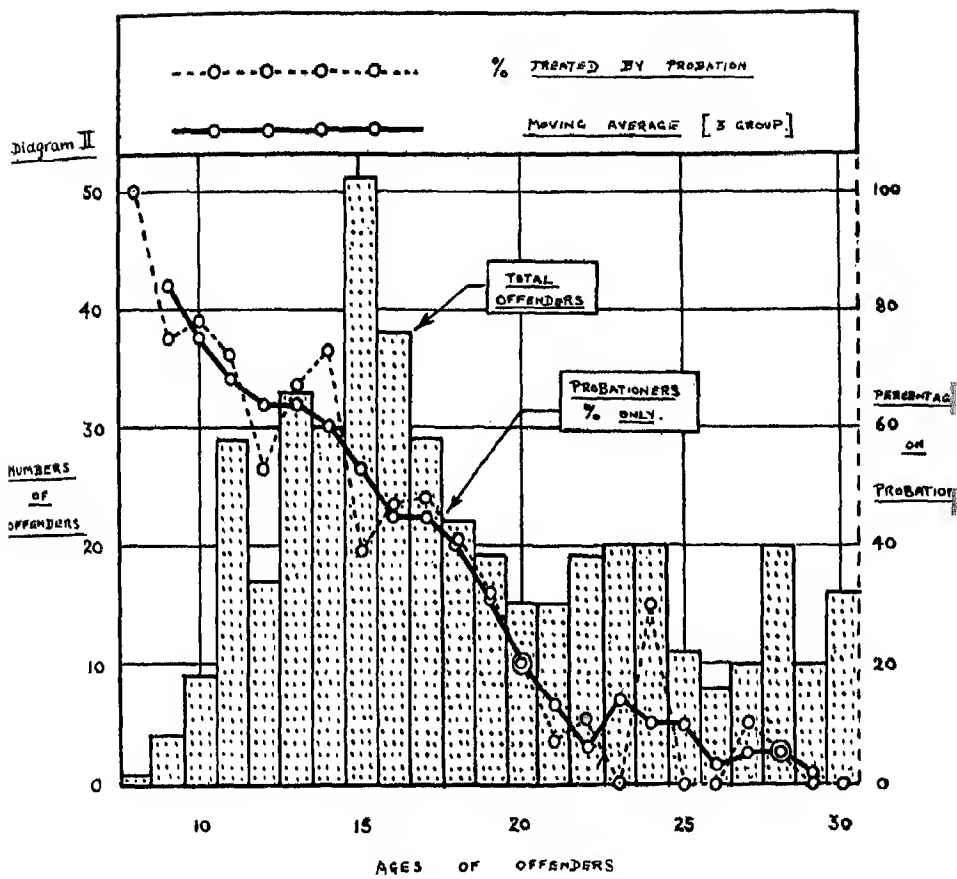


TABLE I.—SUCCESS OF PROBATION AT DIFFERENT AGES.

	From 2,311 Offenders : Home Office Enquiry. Three-year Follow-up. ¹	Result of First Probation Period in Records : Coventry—717 Cases.
Children under 14 years	65.3% satisfactory.	83 % satisfactory.
Young Persons, 14-16 years, inclusive.....	68.2% "	84.9% "
Age 17 and under 21 years	73.3% "	85.0% "
Age 21 and over.....	81.8% "	87.4% "
Standard Error of Difference between Proportions—Satisfactory: (Coventry only)		
Under 14 years and 14-16 years		3.3%
Under 14 years and over 21 years		4.1%

¹ *The Probation Service: its Objects and its Organisation*, p. 13.—H.M. Stationery Office.



III.—PERIODS OF PROBATION AND SUCCESS OF APPLICATION OF THE ACT.

The main periods of probation used are six months, twelve months, and two years. Table II shows the twelve months' period to be the most common. The immediate success achieved after the assigned period of probation is shown in the third column of the same table. The outstanding point is the high percentage reported as concluded satisfactorily in all three groups. Little importance is attached to the relative merits of each period, since much depends on the reasons for the original periods assigned and the consequent potentiality of success. In addition, the statistics may reflect the ability of the magistrates to assess the most suitable period for the particular offender.

A more accurate estimate of the effect of the period of probation is obtained from the follow-up survey. The first is a general follow-up over the period 1931-42. It covers so-called first offenders as well as those who had already been in contact with the police prior to 1931. The period permits of a ten-year follow-up in some cases, but in others the period of probation only will have been completed. The second is a five-year follow-up,

obtained by considering the cases of those offenders for whom a period of at least five years had elapsed since the expiry of the original order against them. If we regard committal to approved school or prison as evidence of the failure of probation methods, then the following results are apparent:

General follow-up.

- (a) Fifteen per cent of the probationers whose records are examined in Table III were failures;
- (b) First offenders were ultimately much more amenable to probation methods, only 59 out of 530, or 11 per cent, being failures, as compared with 48 out of 206, or 23 per cent, of offenders who had had previous contact with the police;
- (c) Of 62 first offenders put on further probation 18 were finally sent to approved schools or prison, whilst the results from 19 old offenders gave 10 as concluded unsatisfactorily. This indicates that as the offenders were subjected to additional periods of probation a tendency towards a residual number of incurables became apparent.

Five-year follow-up.

- (a) 245 out of 330 cases, or 74 per cent, do not appear in the records again, and in the absence of further information must be regarded as satisfactory.

TABLE II.—SHOWING VERDICT AFTER FIRST PERIOD OF PROBATION RECORDED DURING 1931-1942. FUTURE PERIODS NOT SHOWN.

<i>Period of Probation.</i>	<i>Result Recorded after this Period.</i>	<i>Frequency.</i>	<i>Percentage.</i>	<i>Total of 737 Cases for which Information was Available.</i>
Six Months or less....	Satisfactory	68	88	
	Unknown	4	5	
	Unsatisfactory	3	4	
	To Approved School or Prison ..	2	3	
	TOTAL	77		
Twelve Months and Eighteen Months	Satisfactory	485	81	
	Unknown	20	3	
	Unsatisfactory	25	4	
	To Approved School or Prison ..	67	11	
	TOTAL	597		
Two Years or more ..	Satisfactory	47	75	
	Unknown	4	6	
	Unsatisfactory	3	5	
	To Approved School or Prison ..	9	14	
	TOTAL	63		

Satisfactory: 600 out of 737 Offenders=81.4%

Standard Error of Difference between Proportions—Satisfactory:

(a) Between 6 months and 12 months	4.0%
(b) Between 6 months and 2 years	6.6%
(c) Between 12 months and 2 years	5.7%

TABLE III.—GENERAL FOLLOW-UP.

Type of Offender.	Original Period of Probation.	Number of Offenders.	Number Re-appearing.	Treatment.			Finally sent to Approved School or Prison.
				Dismissed.	Fined.	Put on Probation.	
First Offenders. No previous Contact with Police Reported.	6 months (or less)	63	10	0	0	10 { 6 months' probation... 1. 12 months' " " 7. 2 years' " " 1. Direct 1.	0
	12 months (or 18 months).	430	106	5	17	84 { 6 months' probation... 2. 12 months' " " 39. 2 years' " " 8. Direct 35.	0
	2 years (or more).	37	14	2	3	9 { 6 months' probation... 0. 12 months' " " 2. 2 years' " " 2. Direct 5.	0
	TOTAL	530	130	7	20	Total on Probation..... 62. Direct 41.	18 } 59 .41 }
Old Offenders. Previous Contact with Police.	6 months (or less).	14	4	1	0	3 { 6 months' probation... 0. 12 months' " " 2. 2 years' " " 0. Direct 1.	0
	12 months (or 18 months).	166	50	0	2	48 { 6 months' probation... 3. 12 months' " " 10. 2 years' " " 3. Direct 32.	2 2 3 2 0
	2 years (or more).	26	8*	0	1	6 { 6 months' probation... 0. 12 months' " " 0. 2 years' " " 1. Direct 5.	0 0 1 5
	TOTAL	206	62	1	3	Total on Probation 19. Direct 38.	10 } 48 .38 }

†108 to Approved School or Prison, i.e., 15% Failures in †737 cases.

Direct Direct to Approved School or Prison.

* One put on probation in Essex.

† Additional person; unknown period of probation.

TABLE IV.—FIVE-YEAR FOLLOW-UP, 330 CASES. TO SHOW REPEATED PROBATION STAGES.

	First Offenders.	Old Offenders.
Stage I.—First Offence.....	<div> <div>231</div> <div>173 Satis. thro' out</div> </div>	Not on Records, 1931-1942.
Stage II.—Previous Offender	<div> <div>40</div> <div>27 Satis.</div> </div>	<div> <div>99</div> <div>72 Satis. thro' out</div> </div>
Stage III.—Still Further Probation..		<div> <div>10</div> <div>5 Satis.</div> </div>
Approved School or Prison	13 18	5 17
Satisfactory throughout Five-year Follow-up Period : 245 cases out of 330—i.e., 74%		

(b) Of the remainder, 32 were regarded as satisfactorily concluded after a further period of probation.

In 1938 the Home Office published the results of a three-year follow-up¹ survey covering some 2,311 probationers of all ages. These probationers were from fifteen different courts and had been subjected to probation orders for one year. It was found that 'rather over 70 per cent, according to the standard laid down, were satisfactory.'

IV.—HOME CONDITIONS.

One of the first aims of the probation officer in his initial enquiry is to obtain a clear picture of the general home environment of the offender. It is obvious that his first report will affect the decision of the magistrates as to whether the offender is suitable for treatment in his own home, or whether he will have to be removed from it. The following sections deal with the various aspects of this problem.

(1) *Broken homes.*

Table V shows that 33 per cent of the probationers who were unmarried came from broken homes, that is, homes in which the normal father-mother relationship had been broken by death, separation, divorce, etc. We must remember that the magistrate may have taken this broken home problem into consideration before putting the offender on probation; yet it is significant that this figure approximates very closely to the 31·5

¹ *The Probation Service*, p. 13, and footnote.—H.M. Stationery Office.

Courts of Birmingham, Bradford, Cardiff, The Gore Division of Middlesex, Huddersfield, Hull, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Nottingham, Portsmouth, Sheffield, Southend-on-Sea, and Stoke-on-Trent.

per cent found by Mr. Chinn in Birmingham for all juvenile delinquents,¹ and again with 32 per cent for juvenile delinquents found by Carr-Saunders, Mannheim and Rhodes.² The table shows the comparative figures for the follow-up of cases from broken homes and those from normal homes. The results are surprisingly similar and require explanation in view of the fact that many researches have shown that the broken home is a powerful factor in the causation of delinquency. It is suggested that the magistrate and probation officer may have been successful in avoiding probation treatment for some offenders from broken homes which were likely to prove a handicap. In addition, the supervision by the probation officer himself may to some extent have compensated for the lack of parental guidance which is usually a consequence of a broken home.

(2) *Home atmosphere.*

Table VI shows the analysis of 597 cases where information was obtainable and relevant. It shows quite clearly that in about 25 per cent of the cases the home atmosphere was unfavourable, and that of these approximately 23 per cent were finally removed to approved schools or prison. The corresponding figure for the more favourable home atmosphere was 12 per cent.

(3) *Home discipline and general co-operation.*

Here we find that in 65.5 per cent of the 597 cases the general discipline and degree of co-operation with the probation officer was such as would not conduce to the satisfactory application of the probation system. This figure compares directly with that found by Dr. Burt in London. The figure was 61 per cent for juveniles.³ Carr-Saunders, Mannheim and Rhodes state that parental discipline was unsatisfactory in 45.4 per cent of the juvenile delinquents which they examined.⁴

TABLE V.—NORMAL HOMES AND BROKEN HOMES, WITH PERCENTAGE OF FURTHER OFFENCES AND FAILURES.

	Cases Considered.	Number on Further Probation.		To Approved School or Prison.	
Normal Relationship—i.e., Both Parents alive and living together.....	459	59		64	
TOTALS	459	59	13%	64	14%
Broken Relationship:					
Father dead	60	7		7	
Mother dead	36	2		5	
Both Parents dead	18	1		2	
Step-Father	31	5		8	
Step-Mother	18	0		1	
Illegitimate	12	1		4	
Parents Divorced, Separated, or whereabouts unknown.....	53	6		9	
TOTALS	228	22	10%	36	16%
Percentage Broken Homes .. 33%					
Standard Error of Difference between Proportions Committed to Approved Schools or Prison .. 2.9%					

¹ W. L. CHINN: "A Brief Survey of Nearly 1,000 Juvenile Delinquents."—*This Journal*, Vol. VIII, February, 1938.

² CARR-SAUNDERS, MANNHEIM and RHODES: *Young Offenders*, p. 149.

³ C. BURT: *The Young Delinquent*, p. 101.

⁴ CARR-SAUNDERS, MANNHEIM and RHODES: *Young Offenders*, p. 151.

TABLE VI.—HOME ATMOSPHERE AND HOME DISCIPLINE: GENERAL SURVEY.

	Number of Cases Considered.	General Result.	To Further Probation Periods.	To Approved School or Prison.
<i>Home Atmosphere :</i>				
Good	100	} 448 Cases or 75% Favourable.	55 i.e., 12%	53 i.e., 12%
Satisfactory or Fair.....	348			
Unsatisfactory	120	} 149 Cases or 25% Unfavourable	20 i.e., 13%	34 i.e., 23%
Very Poor	29			
Standard Error of Difference between Proportions Committed to Approved Schools or Prison .. 3.8%				
<i>Home Discipline and Degree of Co-operation.</i>				
Strong or Satisfactory.....	206	} 391 Cases or 65.5% Unfavourable.	58 i.e., 15%	77 i.e., 20%
Not Enough, including Indulgent and Little Co-operation.....	143			
Definitely Weak, including No Co- operation	146			
Divided : Father > Mother	57			
Divided : Mother > Father	45			
TOTAL	597			
Standard Error of Difference between Proportions Committed to Approved Schools or Prison .. 2.5%				

The follow-up results given in Table VI show the importance of the home discipline, in that 20 per cent of those cases from 'unfavourable' homes were reported as failures, as compared with 5 per cent only from the 'favourable' homes.

(4) *Families.*

Most of the probationers came from fairly large families. 83 per cent of families had three or more children. 34 persons were in the 'only child' category, and 105 were brothers originating from 49 homes. This means that in the remaining cases at least one, and sometimes several members of the same family have survived the environment and home conditions held in common with the offender. Butcher, Hoey and McGinnes have already expressed views upon this point. After studying forty pairs of brothers, one severely delinquent and the other non-delinquent, they say: "The present study shows that environment is selective. Members of the same family live in different environments as their varying intelligence, emotional stability and other traits cause their acceptance by one social group and their rejection by others. The findings suggest the inadequacy of programs arrived at by the presentation of a uniform environment with a hope of attaining uniform behaviour."¹

This would seem to be an argument in favour of probation methods in which the offender is treated in his own home. It justifies the reluctance of magistrates to commit to approved schools or prison.

V.—OCCUPATION.

(1) *Work.*

Table VII indicates that 16 per cent of the probationers were in employment described as definitely unstable, in that they frequently changed their occupations in search of higher wages, through dismissal for unsatisfactory work or attendance, or through apathy.

¹ Quoted by N. D. HIRSCH in *Dynamic Causes of Juvenile Crime*.

Thirty per cent of the probationers were in the two groups 'definitely unstable' and 'fairly unstable.' Whether the instability in employment is due to some temperamental trait or to the fact that the offender has been unable to find work which interests him, is difficult to decide; but the results in the end column show clearly that there is a much greater chance of success for probation treatment if the person is in suitable employment. It is suggested that the wider application of vocational guidance and vocational selection methods might help to remedy this fault, although there is still the problem of the parents who are obliged, or wish, to regard their children as potential wage-earners only.

(2) *Leisure.*

The occupation of leisure time is reviewed from three aspects: (a) interests; (b) membership of organisation; (c) friends.

(a) *Interests.*—The results show that lack of any definite interest is very common, a considerable number of probationers being interested only in cheap periodicals, the cinemas, and street-corner lounging. The tables show a correspondingly poor response to probation methods.

TABLE VII.—STABILITY OF EMPLOYMENT AND NUMBERS RECEIVING FURTHER TREATMENT OR FINALLY COMMITTED TO INSTITUTION.

	Number of Offenders.	Put on Further Period of Probation.		Finally Sent to Approved School or Prison.	
		Number.	Percentage.	Number.	Percentage.
Definitely Unstable.....	116	22	19	35	30
Fairly Stable	102	8	8	17	17
Satisfactory or Not Employable ..	502	53	11	51	10
Standard Error of Difference between Proportions Committed to Approved Schools or Prisons: Between Definitely Unstable and Satisfactory Employment .. 4.5%					

TABLE VIII.—INTERESTS, AND COMPARISON WITH THOSE PLACED ON FURTHER PROBATION AND FAILURES.

	Total.	On Further Probation.		Finally to Approved School or Prison.	
		Number.	Percentage.	Number.	Percentage.
A.—One or More Definite.....	119	16	13	7	6
B.—None Stated	397	37	9	58	15
C.—Cheap Literature, Cinemas, Streets, Gambling, etc.	211	28	13	43	20
Standard Error of Difference between Proportions Committed to Approved Schools or Prison					
Between A and B				2.8%	
Between A and C				3.5%	
Between B and C				3.3%	

(b) *Membership of organisation.*—This problem would repay a more thorough investigation. The sub-divisions in Table IX are not adequate and need a note of explanation. A good many probationers have had a fleeting acquaintance with some social organisation prior to being charged. The short duration of the membership is sometimes

due to the 'marked man' attitude towards any person who becomes a member of a boys' club, organised, or actively supported by, the probation officer. Again, the boy may be temperamentally unsuited and will not mix. • He may be deliberately opposed by his parents. These few points show the magnitude of this task, and it is hoped that the new youth centres will provide full scope for healthy activities for the youth who is bored and in search of amusement.

(c) *Friends*.—The follow-up results showed a slight tendency for those with satisfactory friends to respond better to probation treatment. It is obvious that the tendency to form gangs is undesirable in those parts of the town where the gang might well become vicious.

TABLE IX.—MEMBERSHIP OF AN ORGANISATION AND ITS RELATION TO SUCCESS OF PROBATION METHODS.

		Total.	On Further Probation.		Finally to Approved School or Prison.	
			Number.	Percentage.	Number.	Percentage.
Membership of an Organisation.	None	514	48	9	88	17
	Already a Member	68	7	10	5	7
	Was a Member, now lapsed ..	59	9	15	9	15
	Joined during Probation period	79	11	14	5	6
	Joined during Probation period and lapsed	11	5	45	1	9
	TOTAL.....	217	32	15	20	9
Members, or had been Members		30%				
Standard Error of Difference between Proportions Committed to Approved Schools or Prison :						
Between non-Members and Members.....		2.6%				

VI.—PERSONAL TRAITS.

(1) *Temperament*.

Temperamental traits were grouped into two main categories, decided upon whether these traits were considered to be helpful or opposing to the successful application of probation treatment. Thus in the 'helpful' category were such traits as honesty, reliability, co-operation, generosity, etc., and in the 'opposing' group, plausibility, unreliability, sulkiness, deceitfulness, cunning. The results of the analysis show that 420 out of 613 cases, or nearly 70 per cent of those examined, were possessed of such unfavourable temperamental traits. The results of the probation treatment were equally outstanding: 21 per cent of the persons with unfavourable traits were failures, as compared with 4 per cent from the other group. Thus it may be said that certain temperamental traits are opposed to the successful application of probation treatment, and that the selection of persons with these traits is possible and should help in choosing offenders suitable for treatment by probation methods. It is interesting to note that 81 per cent of all those offenders committed to approved schools or prison were in the opposing temperament group.

(2) *Intelligence.*

The statistics obtained showed that eighty persons were retarded, and forty-two persons were described as bright ; with some slight evidence of increase in lack of response to probation methods in the case of those retarded. The terms 'retarded' and 'bright' are not based on actual I.Q.'s, but on estimates either by school authorities or by the probation officer. They are relative to this enquiry only.

VII.—CASES FINALLY COMMITTED TO APPROVED SCHOOLS OR PRISON—I.E., FAILURES.

Diagram No. 3 shows nine factors of importance in the causation of delinquency, and of consequent importance in the successful application of probation methods to the treatment of offenders. The statistics presented refer to cases in which these factors appeared as unfavourable conditions. Thus the frequency 87, in the case of temperament, means that in 87 cases the temperament was likely to be opposed to probation treatment, and so on.

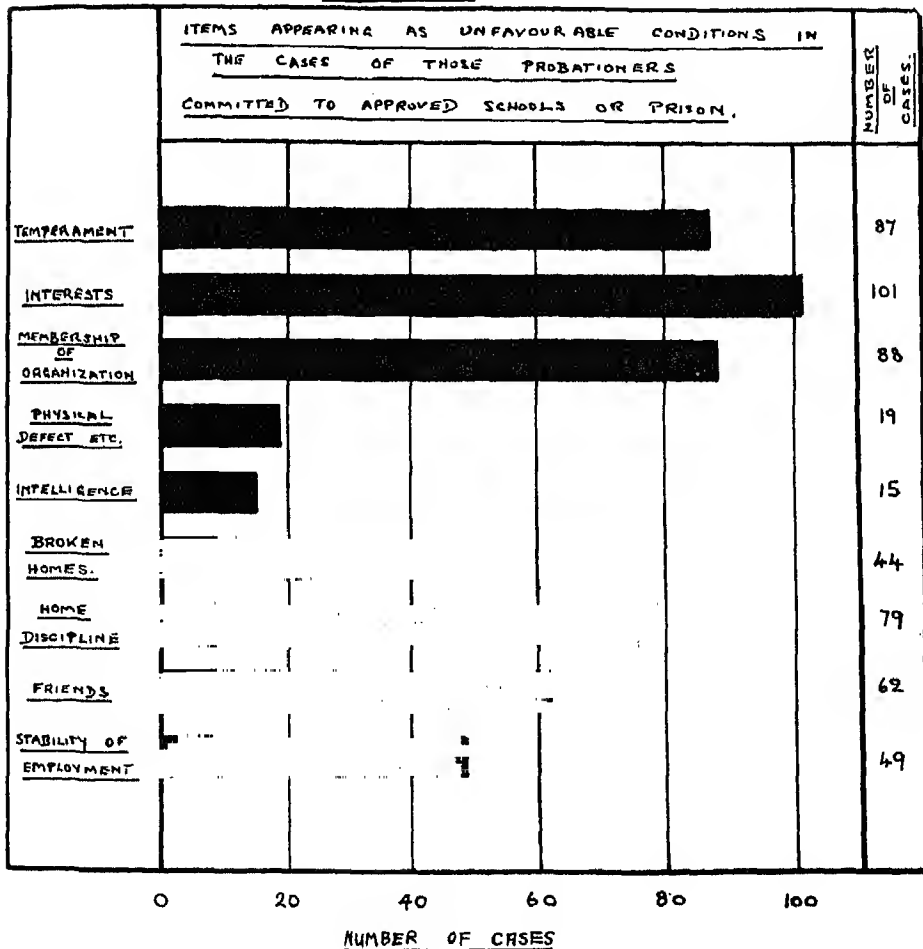
DIAGRAM 3

TABLE X.—SHOWING TEMPERAMENTAL TRAITS OPPOSING AND HELPFUL TO SUCCESSFUL APPLICATION OF PROBATION.

	Total.	On Further Probation.		To Approved School or Prison.	
		Number.	Percentage.	Number.	Percentage.
Helpful	193	11	6	8	4
Opposing	420	58	14	87	21
Standard Error of Difference between Proportions Committed to Approved Schools or Prison : 2.4%					

Table XI shows quite clearly that each offender in this group was subject to two or more unfavourable conditions, and that five was the number typical for the group. This lends support to the theory of multiple causation of delinquency and shows the formidable problem facing the probation officer.

In summing-up the results it is suggested that lack of suitable interests and non-membership of an organisation might well be a function of temperament, in which case the three outstanding unfavourable conditions would be opposing temperament, lack of suitable occupation, and unsuitable home discipline.

TABLE XI.—SHOWING FREQUENCY OF APPEARANCE OF VARIOUS COMBINATIONS OF UNFAVOURABLE CONDITIONS IN CASES OF FAILURE.

Number of Unfavourable Conditions.....	2	3	4	5	6	7	8
Frequency of Occurrence	1	11	25	35	21	12	3

VIII.—SUMMARY AND MAIN CONCLUSIONS.

This article is based upon statistics obtained from the analysis of the individual records of some 750 male probationers in the City of Coventry. The period covered by the investigation is 1931-1942 approximately. The investigation was undertaken to examine the degree of success achieved by the application of probation methods to offenders of all ages, and at the same time to measure the effect of the presence or absence of some of those undesirable conditions which investigators have pointed out as of prime importance in the causation of delinquency.

The ages of the probationers were considered with reference to a control group consisting of all persons found guilty of indictable offences. Defects in home conditions were examined with special reference to broken homes, defective home discipline, and unsatisfactory home atmosphere. The effects upon the probation treatment of erratic employment, lack of definite interests, unsatisfactory friends and temperamental defects, were considered.

The article contains tables showing contrasts between first offenders and old offenders. A five-year follow-up survey is included.

The main findings were summarised by examining the records of those probationers who were committed to approved schools. Nine factors of importance in the causation of delinquency were considered and the frequencies with which these appeared as unfavourable conditions from the point of view of probation treatment were tabulated.

If we consider failure of treatment by probation as proved by committal to approved school or prison, i.e., failure of the treatment of the offender in his own home, then we come to the conclusion that in general the system is successful in Coventry. We find only 15 per cent of the cases considered terminated unsuccessfully as defined above, and in the absence of further evidence we must assume that the greater part of the remainder were

successfully concluded. A more reliable figure was obtained from the five-year follow-up, which shows that 74 per cent of the cases were successful in that they did not appear before the court again, or that it was not considered necessary to remove them from their home environment.

The frequency of appearance of a specified unfavourable condition—e.g., defective home discipline, is affected by the selection made by the magistrates and probation officer in choosing those offenders likely to respond to probation methods. Nevertheless, the statistics obtained compare quite closely with the corresponding figures obtained by investigators into juvenile delinquency. The success achieved is to some extent a measure of the abilities of these officers to make the selection and this might explain the unusual results discussed under the heading of broken homes, where the probationers from broken homes responded just as well as those from normal homes.

The investigation has been conducted so that the effect of a certain number of unfavourable conditions upon the course of probation treatment has been considered in detail. The position has then been reviewed by considering the frequency of appearance of these same conditions in the cases of failure. The results obtained lead us to the conclusion that opposing temperamental traits and defective home discipline were the most potent factors; while lack of definite interests, and erratic employment, were powerful in opposition to the probation treatment. On examining the cases of those committed to approved schools or prison, we find that 75 per cent of the cases fall into a group in which four, five or six opposing factors were at work. Lack of a definite interest appeared most frequently, while unfavourable temperament, poor home discipline and non-membership of a social organisation figured high in the list.

Generally speaking, the factors which are most potent in the cause of delinquency are similarly the most powerful in opposition to the successful application of the probation system.

THE EDUCATION OF THE YOUNG ADOLESCENT: THE PSYCHOLOGICAL IMPLICATIONS OF THE NORWOOD REPORT.

By CYRIL BURT.

I.—*The clean cut at eleven*+. II.—*The three educational types*. III.—*The abolition of the free place examination*. IV.—*Summary and conclusions*.

I.—THE CLEAN CUT AT ELEVEN+.

WITH the problems of post-war reconstruction in mind, the Editor has started a series of articles on the needs of the adolescent. Of the issues thus raised, one of the most far-reaching is that of reorganising our present school system to meet the requirements of older boys and girls. Practical proposals have recently been outlined in the Government's White Paper, and described more fully in the Report of the Committee of the Secondary School Examinations Council. I have been asked to indicate how far these suggestions accord with the general views of educational psychologists.

Earlier in the year, in consultation with the Home Intelligence Department of the Ministry of Information, and with the assistance of educational and psychological colleagues, I drew up a questionnaire on current problems in educational reform, and distributed it to several hundred persons interested directly or indirectly in education—teachers, psychologists, educational officials, school medical officers, parents from the working classes, parents who are employers, and other economic groups. Assuming that the method of sampling was valid, the replies, when complete, should enable us to say what views prevail in these different sections of the community on the various questions raised. For the inferences drawn I alone am responsible; but, as I shall endeavour to show, on the more important conclusions, there would seem to be a wide measure of agreement among those most competent to judge.²

The first proposal of the Norwood Report follows the Reports of the Board's Consultative Committee in recommending that the term 'secondary education' should be given a new and wider sense. It is to be used as "the logical correlative of 'primary,' instead of the colourless" (but less ambiguous) "name 'post-primary'" (Hadow Report, p. 71). Thus, "the prime duty of a school providing secondary education will be to cater for the needs of children entering and passing through the stage of adolescence" (Spens Report, p. 363). No doubt one reason for the change was the hope that it might help to bestow on all schools attended by older children some of the prestige that has hitherto attached to secondary schools in the earlier sense. But its chief purpose was to emphasise a fact "whose full recognition would be one of the greatest of educational reforms: namely, that the problems of educating youth—whether youth of the aristocracy or youth of the slums—are but variants of a single problem: that of dealing fruitfully with a life-period whose central fact is adolescence."³ With this proposed unification the large majority of those who answered our questionnaire are (with occasional reservations)

¹ The following article is based on part of a memorandum prepared at the request of a panel appointed by the British Psychological Society to consider proposals for post-war reconstruction in education. I am grateful to the Editor, not only for suggesting that it should be published here, but also for many welcome criticisms and suggestions.

² A general summary of the results so far obtained by the questionnaire will be published in the next two numbers of *Occupational Psychology*. Here we shall be concerned only with certain specific problems and with replies from what I shall call the 'educational group': this denotes a group of nearly 200, consisting of lecturers and professors at training colleges or university education departments (briefly called 'educationists'), education officials and school inspectors, and teachers at elementary and secondary schools. I should like to repeat my thanks to the numerous correspondents who were good enough to assist in the inquiry.

³ NUNN, T. P.: *Education: its Data and First Principles*, pp. 237-238.

broadly agreed ; 78 per cent are in favour ; 14 per cent against ; the remainder are unable to reply.

The next problem is the age at which post-primary (or 'secondary') education should commence. On this the replies are more divided : 58 per cent favour the age of 11+ so long as pre-war conditions continue ; the remainder favour 12+ or 13+. 62 per cent hold that the point cannot be settled without reference to the age of leaving school ; if this is over fifteen the majority (67 per cent) would prefer an age later than 11+¹. The Norwood Report favours the earlier age. "At the age of 11+, or earlier in some cases, a child would pass into one of the three types of secondary education which we have postulated" (p. 15). A psychologist is tempted to inquire : Why is it to be assumed that adolescence commences at eleven, rather than at twelve (the age envisaged by the Board's Regulations of 1904 and 1935), or at thirteen (the age most preparatory and public schools fix for the transition), or even later still?

The reasons for proposing the age of 11+ are not discussed in detail either in the Government White Paper or in the Norwood Report. They may, however, be inferred from the reports of the Consultative Committee. There are, to begin with, two psychological reasons :

(1) Owing to the constancy of the intelligence quotient, the differences in general intelligence become wider and wider as children grow older : at six or seven the majority differ at most by two or three mental years only, and can be taught if necessary in a single class ; children of nine or ten are spread out over four or five mental years, and can be distributed among different classes within the same school ; but by the age of twelve or thirteen the differences have widened so much that the allocation of pupils according to their intellectual level to different classes in the same building becomes imprudent if not impracticable ; except in the case of the largest schools it means placing the bright young children with the older dullards side by side on the same benches.* With this contention every psychologist would appear to agree.

(2) In the earlier stages of the discussion a second psychological reason was frequently advanced. Mental growth, like physical, it was supposed, "advances, not in a straight line, but in three major waves" ; the first "lasts from birth to the age of seven or eight" ; the second "normally spends its force at an age not far from twelve" ; and "this is followed by a period of rapid development, carrying the boy or girl on through adolescence to maturity."²

The doctrine is at least as old as Rousseau : "there is the third stage of childhood, when our scholar is approaching adolescence, though he has not yet reached puberty" (*Emile*, p. 41). It dates from a time when hardly any data were available for determining empirically (had anyone in those days wished to do so) how far the rate of mental development remains steady, and how far it varies from phase to phase. We now know that those who declare that the rate is constant are much nearer the truth than those who describe it as essentially

¹ Most of those favouring the age of 11+ are teachers at secondary schools. The chief argument is that the school leaving certificate entails a five-year course. Many, however, consider that, if a pupil is not able to pass the examination after four years in a secondary school, he should not sit. If the school certificate is to become a purely internal examination, these arguments would no doubt be modified.

² Spens Report, pp. 124-125.

³ A study of Chapter III in the Spens Report suggests that the Committee had some difficulty in reconciling the views of its medical and psychological witnesses. The medical witnesses adhered to the old notion, popularised by Stratz over thirty years ago, that "the growth of the normal child does not proceed at a uniform rate, but is characterised by . . . an alternation between stages of rapid development and stages of relative consolidation" : one of these "periods of rapid growth" was said to start at the age of eleven, and to be accompanied by "striking changes in mental attitude taking place in each child by reason of the onset of puberty" (loc. cit., p. 108 : Stratz's diagram was reprinted in the Committee's report on the Primary School, p. 225). In keeping with this view the Committee in various places speaks of the age of eleven as marking a *natural* point of change. Elsewhere, however, they apparently prefer the view put forward by their psychological witnesses, and state that "although the belief that adolescence is an abrupt event with well-marked characteristics still survives, more recent research has shown that this opinion is erroneous. Intellectual growth is not spasmodic, but remarkably uniform. For administrative and other reasons it may be advisable to transfer children at the age of eleven ; nevertheless education, like mental development, should form one continuous process" (pp. 121-3). For physical growth an analysis of curves is given in *The Backward Child*, p. 654, and shows that there is nothing like an "alternation of stages."

rhythmical. If we plot a curve of growth for any particular mental characteristic¹ the unaided eye at once declares that, between the ages of five and thirteen, the 'curve' is practically a straight line: the departures from a uniform rise are so slight that only the most careful calculations, based on very large numbers, can demonstrate their occurrence. The sudden emergence of new faculties, of which Stanley Hall's disciples used to speak, has certainly not been substantiated. Even at the stage of puberty, in a normal healthy child brought up in a normal healthy environment, the remarkable changes emphasised by early text-books are rarely discernible: there is a slow and steady maturation, perhaps slightly accelerated for a while, and eventually appearing, when we compare the child of twelve or younger with the youth or girl of sixteen or more, in qualitative differences (as there always are if we compare children at widely separated ages). But when *sudden* changes are observed they can nearly always be traced to actual or impending changes in the child's situation rather than to the spontaneous inner changes that result from the maturation of his psycho-physiological system.²

Apart from such external influences, the mental changes are so gradual that it is impossible to say whether eleven, twelve, thirteen or even later is the age at which the characteristics of adolescence first 'emerge.' There is no sudden 'crisis,' no 'Rubicon to be crossed'; indeed, as has often been said, the crisis, if there is one, lies rather in the mind of the administrator than in the life of the child.

(3) It would seem, therefore, that the real reasons for suggesting a 'clean cut' at this early age must be administrative rather than psychological. In the days when secondary schools only accepted the brightest 2 or 3 per cent of the pupils in the elementary schools, the borderline for the scholarship winner had to be drawn as high as an I.Q. of about 125 or 130, and an ability equal to a mental age of thirteen was virtually required for entrance. A child with an I.Q. of 125 reaches a *mental* age of thirteen about the chronological age of ten or eleven. Hence children sat for junior county scholarships at 10+, and were transferred to secondary schools at about 11+. But the policy now is "to envisage all forms of education during the secondary stage, so far as possible, as a single whole" (Hadow Report, p. 71). Accordingly, it is natural for the administrator to suggest that the age of 11+ should mark the beginning of secondary education for all. However, if uniformity is the primary requisite, it might obviously be achieved just as well by transferring the bright child at a later age as by transferring the average child at an early age. It is often forgotten that the average child of ten or eleven is mentally two or three years below the level of the brightest: he is immature in

¹ See, for example, the curves drawn in figure 13, pp. 650, of *The Backward Child*. It is true that many individuals, taken in isolation, exhibit appreciable variations, which (as I there pointed out) tend to be smoothed away in the curve of average growth; but the variations do not, as was formerly supposed, occur at the same age with all children, or arise for the same reasons. The unique and individual character of the curves of development for single children has been admirably demonstrated by the recent *Harvard Growth Study* (Dearborn and Rothney, 1942): this still further warns us against the risks of premature school classification.

² I have indicated the importance of maturation in *The Young Delinquent*, p. 223. As to variations in the ages at which the characteristic changes may occur, see Professor Valentine's article in this *Journal*, XIII (June, 1943), especially pp. 58-59. Among the various pieces of evidence supporting the point made in the text, may I cite one which, I find, usually carries most conviction with teachers—an experiment made some time ago and referred to in the Spens Report (p. 138)? Taking the statements in current text-books as a basis, I compiled a descriptive summary of the more striking mental, emotional, and moral characteristics generally attributed to adolescents, and asked a number of teachers at what age, in their opinion, the changes mentioned seemed most noticeable: at elementary schools the usual reply was at or soon after fourteen; at secondary schools, about seventeen or eighteen; in university departments, about nineteen to twenty-one; while in institutions for post-graduate students the age was often put as late as twenty-two or twenty-three. Thus the features described seem to be connected, not so much with the time at which the physiological changes of puberty take place, but rather with the time at which the youth begins to think of himself as no longer *in statu pupillari*, a new man rather than an old child, eager to be independent of parents and teachers, and called upon to shoulder the responsibilities of an adult worker, meeting equals, superiors, and the opposite sex in a way he had never done before: hitherto he has been growing imperceptibly into manhood, almost without noticing it; now it is suddenly forced on his notice. I do not claim this inquiry as decisive. The experience of different types of teacher is itself frequently limited to a short-age range; and, as many point out, among girls the recognition is often brought home to them by the first onset of puberty (which, of course, occurs at widely different ages in different individuals). But, so far as their implications can be trusted, the replies agree with the idea that maturation in itself is essentially a gradual process, and that *sudden* crises so often reported during adolescence are precipitated rather by the accidents of the individual's personal history than by an abrupt internal change shared by all children at his age.

emotional attitude, worldly experience, and social outlook; and outside his own age-group he associates better with pupils who are slightly younger than with those who are fourteen or more.¹

(4) The last objection is met by adducing another administrative reason. So long as 90 per cent of the child population leave school at the age of fourteen it is obviously desirable to set the age of transfer fairly early, otherwise most of them will only be able to spend one or two years in their new school. If, however, the school-leaving age is to be raised to fifteen, still more if it is eventually raised to sixteen, and above all if the present school certificate examination were drastically changed and the notion of a definite school age were dropped altogether, this argument might evidently lead to a different conclusion.²

I am, therefore, tempted to conclude that the principles of practical organisation, as originally outlined in the Hadow Report, may have been sound deductions from the working knowledge and the practical experience of the educationists who laid them down; but that, when the administrator goes on to justify his practical recommendations by theoretical arguments drawn from what he takes to be the psychology of child development, he is apt to go far astray. This seems particularly true in the departures from the Consultative Committee's Reports proposed by the Norwood Committee. The fact that the reasons given are wrong, while the general policy is right, would not matter greatly, were it not that in the working out of that policy many of the practical details suggested may be deduced from the erroneous arguments put forward in its favour.

II.—THE THREE EDUCATIONAL TYPES.

For the 'secondary' stage, the Norwood Committee, like the Government White Paper, recommends three main types of schools—to be known as grammar, technical, and modern schools. The White Paper implies that these three types of school are intended to correspond with the pupils' 'special gifts and capacities.'³ The Norwood Report is somewhat more explicit. It begins by pointing out, quite rightly, that "school organisation and class instruction must assume that individuals have enough in common as regards capacities and interests to justify certain rough groupings." Now the grouping of individual children according to 'mental type' is a psychological problem to which much technical research has recently been devoted. The Committee, however, consider that "it is not necessary to pursue the questions whether the groupings are distinct on strictly psychological grounds, whether the differences are differences in kind or differences in degree." Their argument is rather that this threefold classification has "established itself in general educational experience, and has, in fact, been justified in educational practice."

¹ A similar criticism was urged by Prof. Godfrey Thomson against the recommendations of the Hadow Report. He pointed out that the practical effect would be that in general the transition from primary to secondary education would be made when the child reaches a definite chronological age rather than a definite standard of mental achievement; on the other hand, "the Scottish method is to make the change depend upon reaching a certain achievement age: and the average (chronological) age in Scotland is nearly 12½." (*A Modern Philosophy of Education*, 1929, p. 203.) Footnotes in both the Hadow Report (p. 71) and the Norwood Report (p. 15) allow some latitude: but the assumption seems to be that individual variations in mental age at most cover a range of three years only (not, as the psychologist would maintain, something like eight or ten), and so are of minor importance.

² Since the above was written the President of the Board of Education has stated in Parliament that the Board is not unwilling to contemplate raising the general age of transfer when the school-leaving age has been raised. If that is so, it becomes more evident than ever that the psychological arguments put forward in favour of the early age of 11+ (which, I imagine, have never wholly convinced psychologists) were really attempts to rationalise an age which was primarily based on practical considerations.

³ Actually, the phrase is that "all children should receive the type of education for which they are best adapted"; but the adaptation of children to their education is not quite the same as adapting education to the needs of the children. Indeed, one critic has already suggested that the advocates of the plan began considering what was the best method of classifying schools for administrative purposes, and then went on to rationalise their proposals by improvising a psychology of mental types to fit their administrative classification—unaware that the subject of mental types is no longer a matter on which the layman can safely improvise.

With the appeal to experience every psychologist will heartily agree. Contrary to popular notion, the psychologist does not believe in basing sweeping changes solely on general theoretical principles, however well established: he is himself an experimentalist, and would hold that the proper way to discover whether the proposed 'groupings' are the best is to try them out in practice. It is, therefore, the psychological descriptions of the three groups, rather than the grouping itself, that the psychologist may claim to examine.

The three 'types of mind' which the Norwood Committee postulates are described in the following terms. I quote only the main distinguishing phrases:

(I) The *Grammar School* type is one who "is interested in learning for its own sake," can "grasp an argument, follow a piece of connected reasoning, is interested in causes, in the relatedness of related things, in a coherent body of knowledge: . . . he can take a long view and hold his mind in suspense." For such a pupil the grammar school "upholds an ideal of disciplined thought." Its curriculum assumes "that the experience of the past is necessary to the understanding of the present, that the experience of the past is to be found in its literature, and that the extension of experience at which education aims can be effectively brought about partly through the study of books."

(II) The *Technical School* type is one "whose interests and abilities lie markedly in the field of applied science or applied art." "He often has an uncanny insight into the intricacies of mechanisms, whereas the subtleties of language construction are too delicate for him." For him the curriculum "would be closely, though not wholly, directed to the special data and skills related to a particular kind of occupation."

(III) The *Modern School* type "deals more easily with concrete things than with ideas" he often "fails to relate his knowledge or skill to other branches of activity; because he is interested only in the moment, he may be incapable of a long series of connected steps." For him the curriculum should provide "a balanced training of mind and body," making a "direct appeal to interests which it would awaken by practical touch with affairs."¹

At first one might imagine that the three descriptions were intended to suggest three levels of intelligence. To be able to "see the relatedness of related things," to "follow a piece of connected reasoning," to "take long views," these are the hall-marks of high intelligence as the psychologist understands it. On the other hand, the child to whom "abstractions mean little," who is "incapable of a long series of connected steps," and who, even within his limited area, is "generally slow," is surely the child whose intelligence is low.

Yet the general trend of the report appears to contradict any such interpretation. We are expressly told that a pupil of Type III "may have much ability," and that along one line of study he may even "outstrip some of his fellows." On the other hand, the pupil of Type II (the "technical type") may have "either moderate or unusual intelligence." Similarly, while the Spens Committee held that "the grammar schools should continue to provide a suitable education for boys and girls likely to proceed to a university" (p. 363), the Norwood Committee say that the curriculum of the grammar schools (which are to receive Type I) "may or may not look forward to university work." And a closer study of their somewhat ambiguous phraseology suggests that the classification they propose is meant to turn, not so much on differences in the general level of the

¹ It is instructive to compare this with the classification adopted by the Consultative Committee. Besides special provision for the 'slow and backward' they contemplated five main types of education: (a) for the average child either 'senior' classes or departments, or (b) 'non-selective modern' schools similar to the existing non-selective central schools; (c) for the moderately bright, 'selective modern' schools, giving a four years' course "with a realistic or practical trend in the last two years"; (d) for brighter pupils grammar schools "pursuing in the main a predominantly literary or scientific curriculum"; and, finally, (e) technical schools. The 'selection' for both (c) and (d) was to be based on an improved type of free place examination intended to test the children's general ability; the normal age of entry to (e)—the technical schools—was to be fixed at 13+ (Hadow Report, p. 79; cf. pp. 67, 137). The Committee on the whole decided against the establishment of the large 'multilateral schools,' but not against the multilateral principle (Spens Report, pp. xx-xxi).

child's ability, as on differences in its specific nature.¹ Type I is perhaps to be identified with the 'verbal' or literary type; Type II with the 'manual' or 'mechanical'; and Type III with the 'practical' (although elsewhere it is rather suggested that Type III comprises those who belong to no specialised 'type' at all—"pupils whose mental make-up does not, at this early stage, show any pronounced leanings comparable with the other two groups").

It would seem, therefore, that, in formulating its recommendations, the Committee has been guided by the belief that individual differences among pupils are chiefly due, not so much to an innate, all-round capacity entering into every form of mental work, but rather to qualitatively different aptitudes producing qualitatively different types. This is indeed a doctrine that at one time was widely current among educationists; and was a legacy from phrenology and the faculty-schools. Any child who seemed backward at the more intellectual kinds of work was supposed to be endowed, by way of compensation, with exceptional gifts for manual, technical, or artistic work. The notion is well expressed by a well-known political leader who answered our questionnaire: "The child of the working man differs from the child from professional classes, not by a lower intelligence, but a *different* intelligence, that is, by an intelligence directed towards technical skill or practical common sense rather than towards abstract work of a literary or scientific nature."²

This view entirely reverses the facts as they are now known to us. The one thing which the analysis of mental measurements has demonstrated beyond all doubt is the supreme importance during childhood of the general factor of intelligence.³ That was the first discovery of early experiments in mental testing. Moreover, innate differences in general intelligence were found to be much wider than teachers or educationists had previously realised. In surveys carried out in cities like London, Liverpool, or Birmingham, it appeared that, broadly speaking, out of 100 children aged eleven attending the ordinary elementary schools, the dullest has a mental age of rather less than eight and the brightest a mental age of fourteen or more. On the other hand, before adolescence, the influence of qualitative factors—group factors or type factors as they have been termed—has proved to be so slight that their existence has been extremely difficult to establish, and was indeed for long denied by many eminent psychologists.⁴

I believe, however, that the conclusions deduced from the early surveys carried out in London schools would now be generally accepted. In my *Report to the Education Committee on Mental and Scholastic Tests* I argued that, in addition to enabling us to distinguish between "capacities of two main kinds—a general capacity entering into every school subject in

¹ Presumably the classification according to innate intelligence, accepted in the Consultative Committee's reports, was rejected, because the present desire is to give equal prestige to all three types of school. So long as the brighter boys go to a grammar school and the less intelligent take technical, manual, or 'modern' subjects, the latter schools are bound to lose credit with teachers, parents, pupils and even employers. The logical way to avoid this would be to send pupils covering the entire range of intelligence, but of the same *average* level, to all three types of school. Unfortunately, the psychological facts must render any such attempt a failure in actual practice. Since this paper was written, much the same criticisms have been raised by various writers in the *Times Educational Supplement* and other educational journals (e.g., *Times Educational Supplement*, September 25th, 1943, p. 381).

² In the past this view had the support of eminent educationists and psychologists like Meumann and Stern. Since Thorndike first exposed the flimsy evidence on which the theory rested, few psychologists have accepted it: see his section on "the theory of multiple types," *Educational Psychology*, Vol. III, pp. 376, *et seq.*

³ If any reader prefers to hold that what is commonly termed 'general intelligence' is not a single simple entity or 'unitary trait,' but rather the average or 'pool' of a number of elementary capacities, that will not affect the essential position.

⁴ E.g., SPEARMAN: *Abilities of Man*, 1926, p. 241. A reply to these and other criticisms, with a fuller account of the methods on which my evidence was based, and a discussion of the main 'mental types,' will be found in this *Journal* (IX, 1939, pp. 45-71, 'On the Relations of Educational Abilities'). It should be added that, in his later writings, Prof. Spearman has become more ready to admit the existence of 'group factors,' but regards them as in the main an artificial product of education and experience; see footnote later.

different degrees and special capacities entering only into a small group of subjects" (e.g., verbal or linguistic ability, arithmetical or scientific ability, manual or technical ability, and possibly artistic, musical and other æsthetic abilities), the statistical analysis of correlation tables, obtained from "all classes and all departments . . . yields a further conclusion, namely, that the relative influence of the more general capacity is greater in earlier years as contrasted with later": thus "differences in special abilities fail to declare themselves until a comparatively late age."

The following table puts the chief results in succinct form. It shows in percentages the amount contributed at different ages to the total variance by the four main factors usually obtained with a bipolar analysis. The first factor distinguishes children according to the degree of general intelligence; the second distinguishes the verbal type from the non-verbal; the third the manual from the non-manual; the fourth the arithmetical or numerical from the non-numerical.

TABLE I.—CONTRIBUTION OF GENERAL AND SPECIAL FACTORS TO TOTAL VARIANCE AT DIFFERENT AGES.

Factor.	Age 8+.	Age 10+.	Age 12+.
(1) General	52.1	35.6	27.8
(2) Verbal	7.3	9.3	10.7
(3) Arithmetical	3.1	3.0	13.4
(4) Manual	2.5	5.9	6.5

It will be noted that at the ages of eight and ten the general factor of intelligence (*g*) almost swamps the influence of the more specialised factors: the verbal factor (*v*) begins to show itself at a fairly early age; about the age of twelve the special arithmetical factor (*n*) becomes more conspicuous, although the general factor is still twice as important; the manual factor (*m* or *k*) remains obscurely in the background, even at the later ages.

Similar results have been obtained in other countries. In Belgium, for example, F. Chrysostom has applied French adaptations of tests from various sources (*Mental and Scholastic Tests*, *Stanford Achievement Tests*, and *American Army Tests*) to Belgian schoolboys in different school grades.¹ In America Garrett and others have applied psychological tests to boys and girls aged nine, twelve, and fifteen respectively.² Their figures reveal the same phenomenon: "mental abilities become more specific as children grow older."

I myself consider these 'type-differences' to be in the main the effects of innate abilities, interests, and temperamental qualities, maturing at different and relatively late ages, and to that extent permanent. I agree, however, that they may be greatly influenced by experience, by opportunities, by passing interests aroused by friends, companions, favourite books or teachers, and the like, and are to that extent liable to prove temporary. Other psychologists, however, regard any theory of spontaneous maturation as a dubious relic of the faculty hypothesis. Thus, Prof. Spearman and Prof. Godfrey Thomson, who vigorously criticise each other's views about the nature of general intelligence, seem agreed about the origin of these more specialised abilities: they both attribute them rather to the accidental acquirement of special knowledge or interests than to any fundamental difference of mental type.³

¹ *Mental and Scholastic Tests*, p. 266. This is also borne out by the evidence given to the Hadow Committee: "There was general agreement among our witnesses that it is difficult to forecast how a child at the age of 11+ is likely to develop" (p. 139). The notion that most children will be found to show some special aptitude in one direction or another by the age of eleven, if not before, seems to have been based on the popular tendency to generalise from a few exceptional cases. A few children of unusually high musical, artistic, or verbal ability do here and there manifest these particular tendencies at a very early age; Mozart published four sonatas at seven; Tennyson wrote poems at eight; Rembrandt "painted with amazing talent" at eleven.

² Ann. de l'Assoc. Canadienne-Française pour l'Avancement des Sciences, 1938, IV, pp. 124, et seq.

³ "The Age Factor in Mental Organisation."—*Archives of Psychology*, No. 176.

⁴ Cf. SPEARMAN: *Abilities of Man*, p. 242; THOMSON: *Factorial Analysis of Human Ability*, p. 270. Most educational psychologists, I fancy, would now accept the position I have outlined above. It was, for example, explicitly cited and accepted by Dr. Leta Stetter Hollingworth (*Special Talents and Defects*, p. 32), whose book is still quoted by American educationists (e.g., A. O. HERR: *Education of Exceptional Children*, p. 437) as the most orthodox exposition of the subject.

I conclude that, provided the phrase 'mental type' is interpreted somewhat loosely to mean merely 'mental tendency,' it may at times be possible to distinguish between certain 'types of mind'; but that in all such cases the classification of any individual according to one or other of these types is merely a matter of degree, like endeavouring to assign him to a tall 'type' or short 'type'; and further that it would only be in very exceptional cases that such types as are envisaged by the Norwood Report display themselves so early as eleven or twelve.¹ On the other hand, individual differences in intelligence can be observed and assessed at a much earlier age, and remain fairly constant, not only throughout the school career, but throughout adolescence and adult life as well. If, therefore, we are to abandon a classification according to general intelligence as our primary basis and choose instead a classification according to group factors or 'mental types,' we shall be reversing the practical implications of these well-established psychological conclusions.

The Dull or Less Intelligent.—One important group finds no mention either in the Norwood Report or in the Government White Paper—the 'dull and backward.' There are children whose innate intelligence falls as much below the general average as that of the pupils now transferred to secondary or central schools rises above it; and the proportions found in either group are very much the same—averaging about 10 to 15 per cent in most urban areas.

The problem was explicitly recognised by the Hadow Committee. For "children who are slower and more backward than their fellows" the Committee "contemplated the provision of a school where the pace will be somewhat slower, and where practical work will play an even greater part," or (when more than one type of post-primary school, in addition to a secondary school, is not possible) "a system of parallel forms."² "How numerous these 'slower' children will be," the Committee believes, "only experience can decide: with improvement of conditions in the home and in the school their number," they hope, "will diminish."

The phrase 'slow and backward' seems to have been preferred, because the Committee inclined to the popular doctrine that most backward children will, if properly taught, eventually reach the same level of intelligence as the average child, though at a somewhat later age. The psychologist, on the other hand, would declare that at least 50 per cent of the backward pupils—in most areas far more—demonstrably owe their backwardness primarily to an innate lack of intelligence, and so can never attain to the normal level. He would, moreover, add that their numbers can now be estimated in advance from our knowledge of the way intelligence is distributed in the general population and in different types of area. In exceptional areas for which no adequate estimates are available, there is still no need to wait for the slow decision of experience; a special survey by standardised tests would answer the problem at once.³

Let me add that those who have first-hand knowledge only of pupils in secondary schools often fail to realise how low the range of intelligence may drop in children at an ordinary elementary school, and how severely their low level limits what can reasonably be attempted

¹ This view seems to be borne out by much of the evidence received by the Spens Committee; e.g., "We are assured by psychologists and teachers alike that the special aptitudes and interests concerned in the study of a foreign language do not as a rule declare themselves much before thirteen" (p. 182). What I have said above would, I believe, be endorsed by the majority of experienced teachers. Prof. Godfrey Thomson's comment is to the same effect: "Almost every one to whom the direct question is put will reply that twelve is far too young to begin specialisation" (*A Modern Philosophy of Education*, p. 201). Once again may I quote a comment from an L.C.C. inspector in replying to our questionnaire? "Any observant teacher can pick out the *intelligent* children (the future scholarship children, for example) at a very early age—say eight or nine; they note, or should note, the backward readers almost as early, if not before; but good and bad arithmeticians are seldom discoverable till later; the child with manual or technical ability not until near the end of his elementary career. (After all, is that not why we placed our junior scholarship examinations at 10+, but did not pick out pupils for our trade schools until thirteen?). As for the decision to take up languages or science, to become an 'arts' student or a 'science' student, that could not, or at any rate should not, be determined until fifteen or later." The contributory value at later ages of special aptitudes for different types of academic work has been well brought out by Prof. Valentine in his book on the *Reliability of Examinations* (1932, pp. 165 *et seq.*), which contains much valuable material bearing on the whole problem.

² Loc. cit., p. 89. For the older pupils, I would suggest, the type of education should be not merely more 'practical,' but more directly vocational.

³ The methods were fully described in the "Reports of the L.C.C. Psychologist on Backward Children," since published as a volume on *The Backward Child* (University of London Press, 1937).

in the classroom. Indeed, work in secondary schools may leave a very misleading impression of the relative importance of general and special abilities: by reason of economic or administrative selection, the pupils at such a school form a group that is relatively homogeneous as regards general intelligence; hence special abilities and disabilities stand out far more conspicuously, especially among older pupils. In the sixth form, for example, the I.Q. of practically all may be well over 125, three-quarters of the total range being thus dropped out. Consequently, the contrast between the 'type' that is brilliant at languages but devoid of interest or aptitude in mathematics or science, and the 'type' that is of the opposite character, shows up in striking relief. I cannot help feeling that impressions of this kind, which are certainly not shared by teachers in primary schools, may have largely influenced the Committee of the Secondary Schools Examinations Council in its plans for the whole of post-primary education.

III.—ABOLITION OF THE FREE PLACE EXAMINATION.

True to the theory that what determines children's school performances at the age of eleven is not so much differences in general intelligence as differences in special aptitudes, both the Norwood Report and the Government White Paper envisage the total abolition of all those examinations at the age of ten or eleven which, under the name of 'junior county scholarship examinations,' 'examinations for free or special places,' and the like, at present seek to pick out for advanced instruction children whose general intelligence is innately high. The direct testing of intelligence, if attempted at all, is to become merely 'supplementary.'

"In the future," says the White Paper, "children at the age of about eleven should be classified, not on the results of a competitive test, but on an assessment of their individual aptitudes, largely by such means as school records, supplemented, if necessary, by intelligence tests, due regard being had to their parents' wishes and the careers they have in mind." The suggestion is amplified in the Norwood Report. By a school record, we are told, is meant "a record compiled by teachers trained to observe and to reflect upon their observations"; this the Committee regards "as the best single means at present available of discovering special interest and aptitude and general level of intelligence." As for "the tests generally known as 'intelligence tests,' 'performance tests,' and the like," the report observes that they should be used "with full consciousness of their experimental nature."

Advantages and disadvantages of the 'competitive' examinations at the age of eleven.—The Hadow Committee, it will be remembered, was definitely in favour of a general examination, "compulsory on all children qualified by age."¹ The chief argument for abolishing the special place examination runs apparently as follows. Such examinations are competitive: children compete, and schools compete. The competition between children imposes a strain on each child's health and nervous stability; the competition between schools imposes an equal strain on the teachers and on the instruction given.

Nor can it be denied that, as at present carried out, these examinations often entail many serious drawbacks. Special coaching for scholarships, the restriction of 'free self-development by fetters of the external examination system,' the temptation to teach examinable subjects on examinable lines, the unfairness of the 'single opportunity,' the general unreliability of a written examination in English or arithmetic with youngsters of ten or eleven, and, above all, the appraisal of schools and of teaching efficiency by the number of scholarships gained—all these evils have been repeatedly deplored by educational psychologists themselves. The replies to our questionnaire show that teachers, educational officials, and even scholarship examiners fully appreciate the facts (particularly, it would seem, those who have to deal with girls). Yet 71 per cent favour the retention of such examinations; only 23 per cent favour their complete abolition; 65 per cent consider they should be modified in various ways—especially by the use of intelligence tests and teachers' personal assessments. Moreover, the supplementary comments, particularly from teachers in more progressive areas, would seem to demonstrate that the evils attending the free place examination system have greatly decreased during recent years.

¹ Loc. cit., pp. 132-138.

None of the evils is necessarily inherent in a well-conducted external test. All could be reduced to negligible proportions, without abolishing examinations and tests as such, and substituting the slow and wasteful method of probation, or the still more precarious plan of relying solely on subjective impressions of teachers at contributory schools. An ideal examination would consist of (i) a set of group tests for elementary scholastic knowledge and skill (particularly in English and arithmetic) which would eliminate all who did not possess a requisite minimum of attainments in the basic subjects, (ii) a set of group tests for innate intelligence, for which no coaching was possible, and which would pick out the ablest children and ear-mark borderline cases (particularly those whose performances on the given day seemed contradicted by their teachers' reports), and (iii) a supplementary investigation chiefly for these borderline cases, consisting of individual tests, oral interviews, and special records or reports from the pupils' own teachers.

Such an examination would be, not competitive, but selective. Admittedly the ideal cannot as yet be fully realised in practice. Nevertheless, if it became generally recognised that the examination is intended, not to test the moral efforts of teachers or children, but merely to gauge potential abilities and minimum attainments, many of the objections would fall to the ground. Inspectors, committee members, and teachers themselves would understand that a school drawing from a given social class or area might be expected to provide such and such a quota of bright children year after year; and, if some particular school gained more free places than could reasonably be anticipated, instead of reaping glory, it would only incur suspicion.¹

Advantages and disadvantages of teachers' assessments.—Every psychologist appreciates the value of 'school records' scientifically planned and kept. Yet it is the method of recording observations on pupils' abilities, not the methods of testing them, that is now "in an experimental stage." The Norwood Committee seems scarcely to have realised the large and growing part played by tests of intelligence, not only in the special place examinations, but in the regular work of educational psychologists, school medical officers, and teachers themselves. Many teachers have now been instructed in the use of such devices either at their training colleges or in refresher classes organised by the Board, and regularly employ them. On the other hand, as the replies to our questionnaire reveal, most teachers would be extremely reluctant to classify all 11-year-old children into three types mainly on the basis of personal impressions and records; and few would willingly accept sole responsibility for such recommendations. At present, as they themselves admit, when asked about the merits of their pupils who may be candidates for scholarships or free places, they often feel it their duty to offer a generous testimonial; they want to "give the lad every chance" and to "do the best by their own pupils."

There is yet another difficulty that even the most impartial efforts cannot remove. A teacher's notions of what pupils of different ages can and should do is limited by the particular kind of pupil that he has dealt with in his own school or classroom. Each unconsciously adopts his own private standards. Without some more comprehensive means of standardisation how can assessments from different schools be equated or compared?² Moreover, were the pupils' suitability for a new type of school to be assessed

¹ On this point it is worth noting the views expressed by teachers themselves. "We question whether 'perfect freedom for self-development' will follow the abolition of English and arithmetic tests. . . . Teachers in junior schools, with a wisdom beyond temptation, and a proper organisation of classes, should be able to meet the difficulties of the situation" (*West Riding Report*, p. 69; cf. also the paragraph on the 'evils of special preparation,' p. 70).

² The practical experience of the witnesses consulted by the Hadow Committee appears to have been to the same effect. About the value of properly conducted written and oral examinations, supplemented where desirable by tests of intelligence, the Committee had little doubt. But it continues: "There is much difference of opinion on the merits of accepting recommendations of head teachers of contributory schools. . . . The most that can be said is that, in some areas with few schools, the members of the Examining Board and the Secretaries of the Education Committee have become so familiar with the practice of the different teachers as to be able to achieve some measure of standardisation. School records are probably best employed as an aid to an oral examination in exceptional or borderline cases" (p. 138).

solely by the opinion of teachers, should not those who will have to teach them at the new school at least assist in the decision? How many teachers, whose experience has been limited to elementary pupils up to the level of eleven, possess clear ideas as to what capacities are really wanted at a grammar school, a technical school, or a school of applied art? No doubt, had they more varied opportunities for observing what their pupils could do outside the elementary curriculum, their impressions of those pupils' special interests and aptitudes might be of great assistance in the more exceptional cases where specialisation of a permanent nature had already begun to appear. But in regard to innate general ability there can be no question: the unaided judgments even of the most experienced teachers, shrewd as they are in many cases, are nevertheless far less trustworthy in the long run than the results obtained with properly applied intelligence tests.

Those who propose to rely almost exclusively on the teacher's classification can scarcely be aware of the numerous researches that have been carried out, comparing the accuracy of teachers' assessments with that of assessments based on standardised tests of intelligence. The following results, taken from an inquiry on pupils in L.C.C. schools, are typical (Table II). The figures show the predictive value of the assessments, when judged by the boys' subsequent performances after three years in a secondary school. The correlations have been (a) calculated separately for groups of boys coming from the same school, and then averaged, (b) calculated for all boys in a single group regardless of school. All the figures have been duly corrected for selection.¹

TABLE II.—CORRELATION BETWEEN ASSESSMENTS AND CHILDREN'S SUBSEQUENT PERFORMANCES AT SECONDARY SCHOOLS.

<i>Assessments.</i>	(a) <i>Own School.</i>	(b) <i>All Schools.</i>
Intelligence tests .....	.71	.74
Intelligence tests combined with scholastic tests .....	.75	.78
The average of all teachers' assessments .....	.48	.37
The average of the best 10 per cent among the teachers..	.61	.52

If we reduce both sets of assessments to a rough twofold classification only—'good' (above average) and 'poor' (below average)—then a correlation of .37 means that the elementary teacher's classification would be borne out in about 64 per cent of the cases and contradicted in about 36 per cent.

These results appear to be confirmed by Mr. H. A. Evans' recent survey, which covered several hundred children in the Birmingham secondary schools.² The tetrachoric correlation

¹ The observations were necessarily made on children who actually went on to secondary schools. Such children constitute a selected and therefore a relatively homogeneous group. To estimate the validity of the assessments for the general school population, *before* selection has taken place, it is consequently desirable to correct for the attenuation which is produced by working with a selected sample. The method of correction here employed is the inverse of that proposed by Karl Pearson. In matrix notation the formulæ are:

$$R'_{xa} = H_x^{-1} U'_{xa} R_{aa},$$

$$H_x = 1 - b'_{xa} r_{ax} + U'_{xa} R_{aa} U_{ax},$$

$$R^2_{x(a)} = H_x^{-1} (U'_{xa} R_{aa} U_{ax}) H_x^{-1},$$

where a denotes the selective variables (values obtained for both selected and unselected groups), x the non-selective variables (values obtained for the selected group only, e.g., the criterion based on subsequent performance), b'_{xa} the partial regressions, r_{ax} the criterion correlations, $H_a = \Sigma a/\sigma_a$ and $H_x = \Sigma x/\sigma_x$ the ratios of the standard deviations in unselected and selected groups, and $U_{ax} = b_{ax} H_a$. As usual, capital letters denote constants for the larger unselected population, small letters constants for the smaller selected population. An experiment to test the accuracy of the correction was briefly reported in this *Journal* (XII, p. 182) by Miss Stevenson, who employed these formulæ. A proof of the formulæ will be found in *Psychometrika*, IX, pp. 18 *et seq.* The survey covered just under 300 pupils; the probable errors therefore range from $\pm .015$ to $\pm .033$.

² "The Secondary School Careers of Children not recommended by Heads of their Elementary Schools."—This *Journal*, X (1940), pp. 154-171.

between the recommendations of the head teachers at the elementary schools and a classification of the same pupils four years later by the teachers at the secondary schools is, I calculate, only .29 (uncorrected for selection). Thus, out of 842 children recommended for transfer to a secondary school by their teachers at the elementary schools, 53.5 per cent were eventually placed in the top half of the group by the secondary teachers, out of 173 not recommended for transfer by their teachers, who nevertheless later entered a secondary school, as many as 35.5 per cent were placed in the top half. If we compare the recommendations of the elementary school teachers with the results of the admission examination, their forecasts, as we might expect, are better justified: I calculate that the tetrachoric correlation is .77: (this figure of course needs little or no correction for selection, since very few of the non-recommended children who did not sit could be expected to pass). Even so, however, as many as 31.5 per cent of the children who insisted on taking the examination although teachers did not recommend them, nevertheless succeeded in passing.

From our own investigations the following conclusions were drawn¹:

(1) On the whole, teachers tend to mark too generously: they give doubtful children the benefit of the doubt. In technical language, the general *mean* of the teachers' assessments is too high.

(2) As a rule, teachers do not discriminate between pupils of different ability with the same precision as an efficient set of tests: minor degrees of inferiority and superiority they often fail to recognise; major degrees they often under-estimate: they thus tend to over-rate the poor abilities of the dull, and to under-rate the high abilities of the bright. In technical language, the *mean variability* of the teachers' assessments is too small—much smaller than that of the tests.

(3) Individual teachers differ surprisingly from one another in the accuracy of their assessments. Thus, the *correlations* of their estimates with the true measures of their pupils' abilities are not only decidedly lower on the average than the correlations obtained with psychological tests; they also vary far more widely from teacher to teacher. For example, in the inquiry just cited, the correlations obtained between assessments from thirty-two different teachers and the eventual performances of the various pupils assessed ranged from .23 to .71.

(4) Teachers differ widely from school to school in their standards, i.e., in their notions of what the average child of the elementary school can or should do and (still more) of what the child suited to a secondary school can or should do. In technical language, their subjective estimates, unlike the tests, are based on no clearly formulated or trustworthy *norms*. This, as we have seen, is a serious objection to accepting their recommendations without further correction.

(5) Teachers' assessments of ability are largely influenced by the child's present educational attainments, and therefore cannot indicate so well as tests of *innate* capacity how he will probably progress in the future.²

Some of these shortcomings can be partly removed. It may be instructive to note which of the various devices that have been tried in certain schools have most often proved successful.

(1) It is possible, with a little training, for teachers to be taught to mark more objectively and impartially, i.e., to regard marks as a form of scientific measurement rather than as a means of reward, punishment, or encouragement, or as a device for giving their own pupils 'a fair chance,' or as a shortened method for reporting to the parent that his child is doing (or failing to do) his best.

¹ Much of the evidence will be found in *Mental and Scholastic Tests* and later L.C.C. Reports. Many later inquiries show that the conclusions reached in the London inquiries are equally valid elsewhere. Cf. E. H. MAGSON'S monograph on "How We Judge Intelligence," *Brit. J. Mon. Sup.*, 1926, and the Report of West Riding Teachers' Association on *Special Place Examinations* cited above. One of the most recent and most thorough studies of the problem is contained in the International Examinations Inquiry into *Selection for Secondary Education*, conducted under the supervision of Prof. McClelland; here, too, similar results were found.

² This is clearly seen in following up children in secondary schools who have not been adjudged suitable for secondary school work by their own elementary teachers or by their performances in the scholastic part of the free place examination. The child's later teachers often report that he has 'developed' greatly during the later years; and it is commonly supposed that the child's poor attainments at the earlier stage indicated a slow development of innate intelligence which has subsequently been speeded up. In a few cases this is no doubt true. But more commonly, when tests of intelligence have been applied, the I.Q. shows no appreciable alteration, and the development of the child's innate intelligence has proceeded throughout at much the same uniform rate. In such cases the apparent change must be due mainly to changes in emotional, i.e., non-cognitive factors (interest, incentive, congenial conditions at home or school, etc.).

(2) With suitable explanations and practice, teachers can be taught to mark to the same standardised scale, the different levels being defined in terms of frequencies, norms, and typical performances.

(3) Teachers' marks can be re-scaled in terms of a test or examination applied to all the children.

(4) Alternatively, where standardisation or re-scaling is impracticable, teachers' marks may be used to yield the order of merit for pupils in their own school and the external test or examination to determine the number (but not the names) of successful candidates accepted from each (a suggestion urged by Prof. Valentine).¹

(5) Specialists, with a psychological training, should be appointed to assist in the classification. As a preliminary experiment, just as some authorities obtain on loan (from the Central Association for Mental Welfare or elsewhere) an educational psychologist to assist in the detection and classification of the dull and backward, so they might obtain on loan a trained psychologist (from the National Institute of Industrial Psychology or some other body) who could classify the normal and the bright. Later, they might appoint a specially trained psychologist or inspector, just as many have appointed their own specialist to deal with the subnormal.

The advantages and disadvantages of a probationary period.—Some of the points I have so far urged are to some extent admitted in the Norwood Report; but it is supposed that they will lead to wrong allocations only in a small proportion of exceptional cases. With the majority, it is implied, the tripartite scheme of classification can be successfully adopted at eleven; and the possibility of occasional misplacements is to be met by certain supplementary provisions. Thus, in the Government White Paper, it is stated that "the choice of one type of secondary education rather than another for a particular pupil will not be *finally* determined by the age of eleven, but will be subject to review as the child's special gifts and capacities develop." Similarly, the Norwood Committee recommends that the 'lower school,' catering for children of eleven to thirteen, i.e., for those whose special aptitudes have presumably only just matured, should have a common curriculum in all three types of school.

But if the curriculum is to be much the same, why is it necessary to allocate the pupils at so early an age? Presumably the chief aim is to avoid re-transferring pupils from one building to another during their last two or three years of school life. If, however, an appreciable number have after all to be re-classified after a year or two's probation in the secondary school, this difficulty will not really be avoided.

But there is, it would seem, a further reason. The recommendation is based on the common assumption that, until actual trial has been made, it is impossible to say whether a particular child possesses, or does not possess, the ability required for studying those subjects of the secondary curriculum which are new to the pupil—foreign languages, abstract mathematics, or the various branches of natural science. "The best way to establish the absence (of aptitudes for such subjects)," it is supposed, "is to try out the pupils and observe their response to the teaching: pupils who after a year show little linguistic aptitude had better drop the foreign language" (Spens Report, p. 182).

Here much the same error seems to be made as before. The assumption evidently is that, in learning any one of these subjects, the prime factor is a specific aptitude for that subject—an aptitude which can only be detected by seeing what each child can do in the subject itself. In point of fact, as research has amply proved, the ability to take up any such subject with interest and success depends only to a minor extent on aptitudes peculiar to each branch; in the main, particularly at the ages of ten to sixteen, it turns on the possession of a sufficiently high level of intelligence, i.e., of innate *general* ability. Prof. Valentine, for example, has clearly demonstrated that "brilliant capacity for Latin at the age of sixteen to eighteen is indicated quite as well by *general* performance in school at the age of twelve or thirteen as it is by the

¹ *Examinations and the Examinee*.—Birmingham Printers, 1938, Chap. II.

results of the first year or second year in Latin only";¹ and I myself should add that *lack* of capacity to learn such a language as Latin may be still more definitely detected by tests of general intelligence applied at the age of eleven or a little later. If an intelligence test has shown that the child has an I.Q. of only 100, and therefore possesses no more than average² ability—then he will only waste his time in trying to learn French or Latin grammar, in struggling with quadratic equations, or in endeavouring to determine the specific gravity of a given solid or the conditions of equilibrium upon an inclined plane.

And once the children have been sent to some special type of school at the age of eleven is there really much likelihood of any large re-sorting at a later age? The Spens Report states that "instances of transfer of technically minded children seem as yet to be rare"; "as our evidence shows, all transference from school to school is uncommon and in most cases difficult." It is hoped that, with closer relations between different schools, such transfers may be commoner, but the Committee did not "contemplate anything like a 'general post'" (p. 340). Similarly, the Hadow Report regards such re-transference as "exceptional."³

Unless supplemented by more scientific devices, the probationary method by itself is likely to be highly inadequate in practice. This is shown by its present operation.⁴ I have records from 127 university students, giving their reasons for choosing either arts or science subjects. The decision was apparently reached about the age of fifteen; and the chief reasons given may be classified as follows:

(i) *Intended Vocation* (wishes of the pupil or his parents in regard to his career—wishes often based on very inadequate grounds): 27 per cent. (ii) *Pupil's Achievement as Judged by Marks* (i.e., decision was reached by the teachers after comparing the pupil's marks in different subjects): 24 per cent; ability or disability in mathematics is frequently cited as the main factor; wrong allocations are often attributed to the easy standard of the syllabus or the marks in one particular subject, or to the pupil's passing interests or dislikes due to the teacher or his method of teaching. (iii) *School's Achievements as Judged by Academic Success* (ablest pupils required to take subjects in which successes had hitherto been achieved by others owing to special conditions obtaining at the school—e.g., the skill of a particular master in securing scholarships): 22 per cent. (iv) *School Organisation* (e.g., need to keep classes for different subjects approximately equal in size): 16 per cent. (v) *Sentimental Reasons* (personal preferences or antagonisms of teacher or pupil, or friendships with another pupil): 11 per cent (chiefly girls).

¹ *Latin: Its Place and Value in Education* (1935), pp. 124 *et seq.* As he points out, the indications could be somewhat improved by taking into account performances in linguistic subjects generally; for example, he finds that "first year English and French may be at least as good a guide as the first year of Latin." It must be admitted that, until recently, psychological tests of ability in special directions have not proved so effective as tests of general intelligence. For one thing, they have not received the same attention from research-workers in secondary schools as intelligence tests have received from research-workers in elementary schools. But tests of linguistic ability (and of mathematical and scientific ability) could rapidly be standardised, at any rate for older children, once their value had become recognised.

² Average here means the average of the entire population, not what a secondary school master would regard as average.

³ *Loc. cit.*, p. 89.

⁴ Most university teachers can cite instances where head teachers at secondary schools have refused to allow children to follow their obvious bent. According to the replies to our questionnaire, this occurs most frequently in the case of girls possessing scientific aptitudes. In my own college, for example, the majority of the students taking psychology are arts students; yet about 25 per cent explain that they would have preferred to take up science at the secondary school, but were not permitted to do so. A number of women who want to enter the medical profession are compelled to take up intermediate science *after* leaving school, because permission to do so was refused while at school. The same, I am told, is true of intending teachers who would prefer to teach biological subjects.

With boys it is the late development of technical aptitudes and interests that are most commonly overlooked. As I have frequently pointed out in my L.C.C. Reports (cf. *Brit. J. Psych.*, XXXIV, p. 18 and refs.), under a system by which all the brightest children are creamed off at the age of eleven and sent to secondary schools of the 'grammar school' type, while children for trade or technical schools are not selected until the age of thirteen, there is a danger that children of high intelligence, whose bent may after all lie, not in an academic but in a technical direction, will be diverted into the wrong type of education (cf. White Paper, p. 7.).

The misfits thus arising in connection with arts or science subjects in the pupils' own schools are likely to occur on a still larger scale, when it is a question of transference to another school and the choice lies between academic, technical, or 'modern school' subjects.

These are problems to which both educational and vocational psychologists have recently given much attention; and a large number of those who answered our questionnaire have urged the appointment of a 'careers master' (or of a teacher on the staff, suitably trained to act in that capacity) or of a visiting psychologist, who will aid in assessing the abilities and aptitudes of each individual child, when the time arrives for a choice to be made.

IV.—SUMMARY AND CONCLUSIONS.

(1) The grounds for allocating children to schools of different types at the early age of eleven are administrative rather than psychological. Even during the pubertal period maturation is a steady rather than a rapid process. Hence, so far as psychological grounds are concerned, the chief reasons for re-classifying children during the stage of early adolescence arise out of the increasing intellectual differences between individuals rather than any abrupt general change occurring at or soon after the age of eleven.

(2) During school years the restrictions on the type of education from which any particular child can profit are imposed, not so much by lack of special aptitude, as by the limits in amount of general intelligence with which he has been endowed at birth. Hence any scheme of organisation which proposes to classify children at the age of eleven or twelve according to qualitative mental types rather than according to general intelligence is in conflict with the known facts of child psychology.

(3) In the interest of the nation as well as the child, the paramount need is to discover which are the ablest pupils, no matter to what school or social class they may belong, and generally to grade each child according to the relative degree of his ability, and give him the best education that his ability permits. The existing system, which tends to direct all the most intelligent to schools of an academic type, regardless of potential technical abilities, is obviously in conflict with the needs of both the child and of the nation. But the proposed allocation of all children to different types of school at the early age of eleven cannot provide a sound psychological solution.

(4) The present evils of the free place examinations could be removed, if the examination were rendered selective rather than competitive, and turned more on innate abilities than on acquired attainments. Teachers' assessments of their pupils' abilities are in general less accurate than the results of standardised tests; but the former, particularly if obtained from teachers trained in psychological assessment, may profitably be used to supplement the latter.

(5) The classification of pupils for literary, scientific, technical, and other forms of specialised education is as much a matter of vocational as of educational guidance. It should not be determined exclusively by passing interests or permanent aptitudes in the child, or by the tastes or ambitions of the parents, or even by the judgment of the child's own teachers, if that is based solely on the child's early performances in school: the assistance of a psychological adviser (who may be a teacher, inspector, or psychologist specially trained) is desirable, if the classification is to be carried out on scientific lines.

OBJECTIVE TEST FORMS FOR SCHOOL CERTIFICATE PHYSICS.

By H. P. WOOD.

I.—*Aim of the experiment.* II.—*Preparation, administration and marking of the tests.*
III.—*Experimental results: A.—Test 1; B.—Test 2; C.—General.* IV.—*Conclusions.*

I.—AIM OF THE EXPERIMENT.

This experiment was undertaken in order to discover whether examination papers made up of multiple-choice and true-false questions could afford a measure of ability comparable with that at present afforded by the orthodox School Certificate Examination in Physics.

The tests were taken by some seven hundred candidates in the physics examination for the Northern Universities Joint Matriculation Board School Certificate in 1939.

II.—PREPARATION, ADMINISTRATION AND MARKING OF THE TESTS.

Two tests were prepared, both containing only one type of question. Test 1 contained ninety multiple-choice questions, and Test 2 the same number of true-false questions.

After discussion with a number of head masters, the time limit for each test was fixed at forty-five minutes to correspond with an ordinary school period.

The questions were selected to cover the school certificate physics syllabus, a syllabus on which the writer had taught for six years. An analysis was made of previous school certificate papers in order to discover approximately the usual distribution of questions on each branch of the subject. When the ninety questions had been prepared for each test on the basis of this analysis, they were arranged in two groups of forty-five, each group covering the syllabus as shown in Table I.

TABLE I.—DISTRIBUTION OF QUESTIONS IN EACH HALF OF A TEST.

Mechanics and Hydrostatics..	11	Sound	3
Heat	8	Magnetism	4
Light	6	Electricity	13

In the case of the true-false test it was arranged that half the items of the test should be true, the distribution of true and false items within the test being at random.

The tests were prepared without any previous knowledge of the contents of the school certificate paper to be taken by the candidates.

Candidates from sixteen schools worked one or other of the tests. Of these schools, eleven were for boys, one for girls, and the remainder co-educational.

Test 1.—Six Schools. Numbers 61, 53, 52, 79, 72, 58..... Total 375

Test 2.—Ten Schools. Numbers 19, 27, 14, 21, 24, 24, 54, 56, 21, 54 Total 314

It was not possible to administer the test personally in each school. Instead of this, and instead of issuing typed instructions, a visit was made to each school in order to distribute the test forms and to discuss the administration of the test with the members of staff concerned. The ideal arrangement would have been for the tests to be worked on the same day. For reasons connected with school time-tables, this was found to be impossible. All the tests were worked within fourteen days before the actual school certificate paper.

In accordance with the usual practice for elimination of errors due to 'guessing,' the tests were scored as follows, there being five alternative answers to each question in the multiple-choice test:

Test 1.—Score=Number Correct—quarter of number wrong.

Test 2.—Score=Number Correct—number wrong.

The results for each candidate were placed on a large schedule showing for each question whether it was answered correctly or incorrectly or not attempted.

III.—EXPERIMENTAL RESULTS.

A.—Test 1.

(1) Number of candidates 375.

(2) Range of marks:	Test.	S.C.
Highest.....	79.5	260
Lowest.....	11	52
Range.....	68.5	208
Theoretical Maximum.....	90	300
Actual Range as per cent of Theoretical....	76.1	69.3

(3) Distribution of marks:

Both the test and the school certificate distributions approximated closely to the type usually known as a normal distribution:

	Test.	S.C.
Mean.....	37.1	162
Median.....	36.7	155.5
Standard Deviation.....	11.4	46.3
Ratio: $\frac{2 \times \text{S.D.}}{\text{Range}}$	32.7%	44.5%

The relative dispersion is thus greater in the case of the school certificate marks.

(4) Inter-correlations between the marks obtained under various headings:

(a) The Pearson correlation coefficients were calculated for the results of each school, as in Table II.

TABLE II.—PEARSON CORRELATION COEFFICIENTS.

School.	Test and S.C.		Test and School Estimate.		S.C. and School Estimate.	
	r.	P.E.	r.	P.E.	r.	P.E.
1.....	0.63	0.052	0.62	0.053	0.74	0.039
2.....	0.68	0.050	0.72	0.045	0.77	0.038
3.....	0.77	0.038	0.80	0.034	0.78	0.037
4.....	0.66	0.043	0.52	0.055	0.63	0.046
5.....	0.57	0.054	0.48	0.061	0.60	0.051
6.....	0.82	0.029	0.64	0.052	0.69	0.046
All.....	0.66	0.020	0.60	0.022	0.72	0.017

According to the first two columns of Table II there is some fluctuation—from 0.57 to 0.82 and from 0.48 to 0.80—in the correlations of the test scores with both the school certificate marks and the school estimates. On the other hand, the correlation between the school certificate marks and the school estimates is reasonably constant, varying only from 0.60 to 0.77.

The effect of the 'guessing' correction may be estimated from the fact that the correlation of 0.66 given in column 1 of Table II became 0.60 when the raw test scores were used instead of the corrected scores.

(b) In order to be able to compare the present results more easily with those of Robertson and Tryhorn¹ the correlation coefficients were also calculated between the test results and the scores in the two sections of the school certificate physics paper.

TABLE III.—CORRELATIONS BETWEEN THE TEST SCORES AND SECTIONS A AND B OF THE SCHOOL CERTIFICATE PAPER.²

School.	Test and Section A.		Test and Section B.		Sections A and B.	
	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>
1	0.47	0.067	0.66	0.049	0.55	0.060
2	0.53	0.067	0.65	0.054	0.50	0.069
3	0.61	0.059	0.75	0.041	0.62	0.058
4	0.39	0.064	0.66	0.043	0.51	0.056
5	0.44	0.064	0.57	0.054	0.64	0.059
6	0.58	0.059	0.70	0.045	0.52	0.065
All	0.48	0.027	0.66	0.020	0.67	0.019

For all the candidates the correlation of 0.48 ± 0.027 between the test and Section A is very much less than the corresponding figure of 0.80 ± 0.022 obtained by Robertson and Tryhorn.³

It is most noticeable that in every case the test scores correlate more highly with Section B of the school certificate paper, rather an unexpected result.

B.—Test 2.

The correlation between the two sections of the school certificate physics paper (0.67 ± 0.019), though good, is not remarkably high.

(1) Number of candidates 314.

(2) Range of marks :	Test.	S.C.
Highest	76	240
Lowest	— 2	28
Range	78	212
Theoretical Maximum	90	300
Actual Range as per cent of Theoretical....	84.4	70.7

(3) Distribution of marks :

Both the test and the school certificate distributions approximated closely to the type usually known as a normal distribution.

	Test.	S.C.
Mean	37.2	141.7
Median	36.6	142.3
Standard Deviation	16.2	45.8
Ratio: $\frac{2 \times \text{S.D.}}{\text{Range}}$	42.6%	43.2%

The relative dispersions are thus very nearly the same.

(4) Inter-correlations between the marks obtained under various headings :

(a) The Pearson correlation coefficients were calculated for each school, as in Table IV.

¹ R. K. ROBERTSON and F. G. TRYHORN: "Objective Test Form in a School Certificate Examination,"—*B.J.E.P.*, Vol. VII, Part II, June, 1937, pp. 156-160.

² Section A—Twelve out of twenty short factual questions. Section B—Six out of ten orthodox examination questions.

³ Loc. cit.

TABLE IV.—PEARSON CORRELATION COEFFICIENTS.

School.	Test and S.C.		Test and School Estimate.		S.C. and School Estimate.	
	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>
A	0.77	0.066	0.87	0.039	0.90	0.031
B	0.72	0.065	0.80	0.049	0.87	0.035
C	0.86	0.049	0.51	0.14	0.47	0.15
D	0.78	0.060	0.69	0.081	0.80	0.055
E	0.87	0.033	0.36	0.13	0.61	0.091
F	0.52	0.11	0.33	0.13	0.46	0.11
G	0.52	0.070	0.55	0.067	0.64	0.057
H	0.78	0.037	0.68	0.051	0.74	0.043
I	0.59	0.10	0.22	0.15	0.53	0.11
J	0.84	0.028	0.78	0.038	0.87	0.023
All	0.69	0.028	0.59	0.031	0.69	0.028

Table IV shows that there is considerable fluctuation in the values of all three correlation coefficients. In some cases the coefficients given are not statistically significant because of the small number of candidates concerned. Taking the values of the three coefficients for all the candidates as a whole the figures are surprisingly close to those obtained for Test 1.

The effect of the 'guessing' correction may be estimated from the fact that the correlation of 0.69 given in column 1 of Table IV became 0.41 if the raw test scores were used instead of the corrected scores. The difference in this case is quite appreciable.

(b) As with Test 1 correlation coefficients were also calculated using the test results and the scores on the two sections of the school certificate physics paper.

TABLE V.—CORRELATIONS BETWEEN TEST 2 AND SECTIONS A AND B OF THE SCHOOL CERTIFICATE PHYSICS PAPER.

School.	Test and Section A.		Test and Section B.		Sections A and B.	
	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>	<i>r.</i>	<i>P.E.</i>
A	0.46	0.12	0.39	0.13	0.20	0.15
B	0.64	0.067	0.73	0.053	0.77	0.046
C	0.84	0.054	0.87	0.044	0.81	0.062
D	0.66	0.084	0.73	0.069	0.69	0.077
E	0.62	0.085	0.85	0.038	0.65	0.080
F	0.37	0.079	0.56	0.063	0.53	0.066
G	0.37	0.12	0.52	0.10	0.69	0.072
H	0.82	0.030	0.88	0.020	0.84	0.026
I	0.18	0.14	0.64	0.087	0.62	0.091
J	0.72	0.044	0.83	0.029	0.78	0.036
All	0.56	0.026	0.67	0.021	0.64	0.021

These correlations are of the same order as those obtained with Test 1, Table III, and again the test correlates more highly with Section B of the school certificate physics paper than with Section A of the paper.

C.—General results.

(1) The reliability of the tests :

The correlations of the odd and even items of each test were as follows :

Test 1.....	0.696 ± 0.018
Test 2.....	0.660 ± 0.029

Use of the Spearman-Brown formula for the reliability coefficient gave the following figures :

Test 1.—Reliability coefficient	0.82
Test 2.—Reliability coefficient	0.80

(2) *The number of questions answered by the candidates :*

From the marks analysis sheets it was possible to find the number of questions answered by each candidate and to plot a distribution of questions attempted for each test. The medians of these distributions were sixty-one for Test 1 and seventy-nine for Test 2. It appears that the multiple-choice questions take longer to answer than do the true-false questions, and that perhaps one hundred questions might have been better for the latter test.

A further point arises in this connection. In the school certificate examination it was possible to omit a branch of the syllabus entirely—e.g., electricity—and still answer the maximum possible number of questions required by the examiners. On the other hand, in both of the tests, maximum scores could only be obtained by answering all the questions on every subject in the syllabus. For instance, candidates who knew no electricity could still score high marks in school certificate, but would find the possible maximum on the test greatly reduced. That this state of affairs did, in fact, exist, was evident from an analysis of the results on individual questions. Such an analysis afforded at least circumstantial evidence for the information in Table VI.

TABLE VI.—INFORMATION ABOUT BRANCHES OF PHYSICS NOT ATTEMPTED IN THE TESTS.

	<i>Schools.</i>
Apparently no knowledge of electricity	1
Apparently no knowledge of light	1
Apparently little knowledge of electricity	1
Apparently little knowledge of light	2
Apparently little knowledge of heat	1
Apparently little knowledge of sound	12

IV.—CONCLUSIONS.

The following conclusions are drawn from the evidence summarised above :

(1) Both types of test used (multiple-choice and true-false) distribute the candidates in a 'normal' manner.

(2) The correlation between the test scores and the school certificate marks, though not exceptionally high, is good.

Test 1.—Multiple-choice..... $r = 0.66 \pm 0.020$

Test 2:—True-false

(3) The tests correlate well with the school estimates, but not so well as the school certificate examination.

Test 1 and Estimate

S.C. and Estimate

Test 2 and Estimate

S.C. and Estimate

These results are to be expected since the school estimate is in most cases based upon an examination identical in most respects with the school certificate examination.

(4) The tests correlate more highly with Section B of the school certificate examination than with Section A :

Test 1.—A, $r = 0.48 \pm 0.027$; B, $r = 0.66 \pm 0.020$

Test 2.—A, $r = 0.46 \pm 0.026$; B, $r = 0.67 \pm 0.021$

This result is unexpected, since it is commonly asserted that the tests only measure factual knowledge and Section A of the school certificate paper is designed expressly for that purpose.

(5) The correlations mentioned in (3) and (4) above are all much lower than those obtained by Robertson and Tryhorn¹ between a new type chemistry test and Section A of a school certificate paper. This is not unexpected, since Robertson and Tryhorn based their new type test question by question on the known contents of the school certificate paper. In the present case the tests were prepared in ignorance of the contents of the school certificate physics paper.

(6) The reliability of the tests is good :

Test 1.—Reliability coefficient 0.82

Test 2.—Reliability coefficient 0.80

(7) The multiple-choice form of paper takes longer to work than the true-false type. To extend the best candidates, it would seem that ninety questions in forty-five minutes is a suitable number of multiple-choice questions, while one hundred true-false questions would probably be more suitable for the same time.

(8) It was noted that in some cases questions on whole branches of physics were omitted by all the candidates from a particular school. This seems to indicate that there is a tendency for pupils to be taught physics for examination purposes in a piece-meal fashion and important aspects of the subject are neglected.

(9) Because of the effect of the tendency noted in (8) above on the number of candidates answering a particular question, it was not considered feasible to make a detailed analysis of the relative difficulty of the questions or of their discriminating power.

It would appear that, in order to produce a standardised test in this particular subject it would be necessary to set papers on individual branches such as mechanics, heat, etc.

(10) It seems reasonable to state that, taking school certificate as a criterion, the tests are as good as any other examination or repetition of school certificate would be—they select the good and the bad and are less discriminating in the middle ranges.

In so far as examination is a form of measurement, such tests and experiments would appear to be worth while, since progress in measurement necessitates the gradual and continual perfection of the measuring instrument. Certainly, much more experimental work will be necessary before such tests become recognised and effective instruments in English schools.

The writer wishes to express his thanks to the Northern Universities Joint Matriculation Board and to the staffs and pupils of the schools who so kindly co-operated in working the tests.

¹ Loc. cit.

BOREDOM.*

By HILDE LEWINSKY.

I.—*A social problem.* II.—*Definition of boredom.* III.—*Forced occupation of mind.* IV.—*Boredom during leisure.* V.—*Fear of boredom.* VI.—*Boredom as a defence.* VII.—*Boredom and monotony.* VIII.—*Blasé state.* IX.—*The effects of the bored individual on others.* X.—*Longing and inertia.* XI.—*Boredom as a defence against outside stimulation.* XII.—*Summary. References.*

I.—A SOCIAL PROBLEM.

THE problem of boredom is as clearly connected with work as it is with leisure. It contains a danger which overshadows all our social life.

Without any difficulty one can clearly differentiate between the two main situations when people complain of boredom. There is, firstly, the vast number of jobs which become more and more automatic as time goes on. In such situations we find it entirely reasonable and understandable that people should complain of being bored and of losing interest in their work. Their boredom and fatigue and the influence of this state of body and mind on the industrial output has aroused great interest in industrial and social psychology. As early as 1925 Dr. Myers⁸ reports on the practical outcome of experiments carried out at the Manchester University, which showed clearly that the worker's intelligence was responsible for the feeling of boredom. While low intelligence made the girls find the task too strenuous, a degree of intelligence far above the needs of the job led to a feeling of boredom, of not being employed according to ability, with the result of slackening. The outcome of this experiment does not surprise us; it really proved on the whole something which all of us would expect.

The situation is, however, quite different when boredom occurs during leisure. Plans for post-war education have to take this problem into account and will have to think out how this danger can be overcome. That this is beginning to be realised by a wider public can be seen from newspaper articles, of which I quote only Ivor Brown's: "The End Beyond the End," in the *Observer*. Brown says there: "We hope to be delivered in the near future from a series of evil giants—want, insecurity, ignorance, idleness. There remains another giant, whom we are apt to overlook—boredom." Newspapers, Church conferences and educational meetings deal now continually with the question of providing ways and means to fill the leisure time of youth with socially acceptable pleasures. This seems to imply that without the guidance of elders and betters, youth would not be able to benefit from free time. This view has been expressed often enough and quite unmistakably in a recent speech by the Archbishop of Canterbury at a conference on venereal disease, where he said that one main occasion of misconduct was boredom and monotony, and that all good club organisations for adolescents and young adults were a real contribution to purity of life.

Boredom and monotony are made responsible, but that does not explain why people get bored or why they should misbehave when bored. Just as educational interest has shifted slowly from merely observing and stating the nuisance value of children to a more psychological investigation of why the child is naughty or difficult or even why the adult finds the child a nuisance, in the same way it seems necessary to find out why the individual is bored and what processes take place in him.

II.—DEFINITIONS OF BOREDOM.

One of the best definitions of boredom was given by Lipps⁵ in his *Leitfaden der Psychologie*. He describes boredom "as a feeling of displeasure due to the conflict between

* Substance of a paper read to the British Psychological Society's Oxford Meeting on 9th April, 1943.

the urge for intense psychic occupation and the lack of stimulation or the incapacity to allow oneself to be stimulated." Otto Fenichel² adds to this definition that the urge for intense psychic occupation is at the same time accompanied by an inhibition of doing anything and that the individual does not know what to do. One may add that he usually does not even know what he wants to do.

This uncertainty and vagueness about one's own wishes is—I think—characteristic of boredom. It is a search for stimulation with 'destination unknown,' parallel to what K. Buehler¹ called 'Reizhunger.' The great difficulty lies in the fact that the condition cannot be overcome by any stimulation other than some specific one.

III.—FORCED OCCUPATION OF MIND.

In the life of more or less healthy individuals there are certainly many things which—for various reasons—have either never had or have lost the capacity to stimulate interest and keen pleasure. They belong to that group of objects, persons, thoughts and emotions which one forgets without dynamic repression. They become—using Professor Pear's expression⁷—superseded; they fade out. James,⁴ in his *Principles of Psychology*, says of them: "Now there are always some objects that for the time being will not develop. They simply go out; and to keep the mind upon anything related to them requires such incessantly renewed effort that the most resolute will ere long give out and let its thoughts follow the more stimulating solicitations after it has withstood them for what length of time it can."

A forced occupation with these subjects might provoke a reaction which—although we generally call it boredom—consists mainly of impatience and anger. The feeling aroused would be one of mental stress necessary to give attention to or to feign intelligent interest in something which does not evoke a response in us whether intellectually or emotionally. But still less should it be called boredom when our mind—as James put it—follows more 'stimulating solicitations.' This is not boredom, but change of objects; there would be no state of boredom if one started reading a book as soon as one lost interest in the play on the wireless. Only when one continues to listen to the play without interest could one logically speak of boredom. The same applies if one starts to day-dream during, e.g., a lecture. The actual time of being bored would be between the period of forced attention and concentration and the beginning of day-dreaming.

IV.—BOREDOM DURING LEISURE.

The concept of forced attention does, however, only cover some of the occasions when people feel bored in their leisure time. In W. H. Davies' lines: "A poor life this if, full of care, we have no time to stand and stare," the problem is entirely mis-stated. It is not true that people have no time to stand and stare. On the contrary, they do their best to avoid having to stand and stare, they infinitely prefer to sit and stare at a cinema screen. In this connection it is interesting to note the change the word 'amuse' has undergone. To amuse meant originally to muse at, to wonder, to gaze, in fact, to stand and stare, while it expresses now a pleasant and easy diversion of thought.¹⁰

With people prone to be bored 'standing and staring' is one of the main occasions which evoke in them feelings of violent boredom. They continually seek interruptions of this state through stimulation from without. They give the impression of being definitely frightened of being alone with themselves.

Let us examine again the types of boredom during leisure:

- (1) Where stimulation from without is lacking—the forced attention situation, e.g., a tea party with non-congenial people, etc.;
- (2) Where there is an incapacity to let oneself be stimulated.

In the first situation we meet feelings of repugnance due—according to Shand⁹ in *The Foundation of Character*—"to being kept in the present situation in spite of our

impulse or desire to change it." The inhibition of our impulse is in cases of this kind mainly due to social conventions. Good manners and politeness forbid one to get up and leave the company as brusquely as one might like to do. This state of mind finds some outlet in bodily restlessness, fidgetiness, etc., which we can observe still more clearly in children, as their obedience to social conventions is not yet as strongly fixated as with adults. In situations of this type we can register in us feelings of annoyance, anger and disappointment that expectations of the new and pleasant have been frustrated.

But what goes on in the second situation when there is an incapacity to let oneself be stimulated? The inhibition of action is then not due to the wish not to appear rude. It is even doubtful whether one can speak at all of an inhibition of action as the individual does not know what he wants to do. All he feels is he wants to do or have something, but *what* he would be unable to express.

V.—FEAR OF BOREDOM.

It seems important to take into account that people are afraid of boredom. This fear is usually expressed as being afraid of being alone and/or without occupation. According to Fenichel's conceptions of boredom there is a tension due to impulse stimulation; there is, however, no conscious impulse aim. That is, the tension is felt, but appears to be aimless; the person wants, but does not know what. What has happened to the impulse aim? The assumption that it has become repressed because it is not socially acceptable or because it is or was once painful, seems to find support in the interpretations of the substitute actions which we can observe in children and adults during fits of boredom. Furthermore, opinions such as those of the Archbishop of Canterbury could then be explained better and more clearly. He—and with him most people concerned with the free time of youth—stated that "one main occasion of misconduct was boredom and monotony." This statement might be changed in the following way: When an individual is not occupied there is a grave danger that impulse aims which have been repressed can break through. Psycho-analytical practice brings ample support for this hypothesis. The number of patients who are afraid of being alone is great, one reason for their fear being that they feel unable to withstand the temptation to do things which were or are forbidden. The neurotic's fear of being alone corresponds closely to the so-called normal individual's fear of being bored. Boredom is often a symptom and—like every symptom—an unsuccessful attempt to cope with an endogenic conflict. The way the individual chose in attempting a solution presents still another and very important feature, that is, the repression and inhibition of phantasy life on account of its close and vital relation to the forbidden actions. Individuals who get bored can't let themselves be stimulated, that was Lipps' definition. If they were ever to allow themselves a certain freedom of phantasy they could not be bored.

VI.—BOREDOM AS A DEFENCE.

Boredom of the described kind acts as a form of defence against impulses by denying them. An answer to the question why the impulses needed originally to be denied would have to include all anxiety evoking situations against which the ego defends itself.

The being alone allows the readier occurrence of thoughts of forbidden things whether pinching food, looking at forbidden books or masturbating, etc. Furthermore, being alone appears to be a synonym for being lonely, lost, left out and neglected. For these people being by themselves means loneliness not solitude.

It is known that it is very difficult to draw people out of their fits of boredom. This is only natural because of the ambivalence of the bored individual: he wants to follow the temptation and he wants to avoid it as well. Thus everything which is too near the repressed aim—and could therefore gratify the tension easily—has to be refused for the same reason which made it necessary to repress the original aim; but everything which is too far removed from it cannot satisfy at all. In fidgeting we can see that in a distorted form something of the original aim finds an outlet.

VII.—BOREDOM AND MONOTONY.

The concept of boredom as the result of a resistance to a breaking through of impulses helps us also to understand the role of monotony with regard to boredom. For the small child and the primitive person monotony is neither boring nor unpleasant; on the contrary, the child anxiously corrects every innovation or change in a story or a game and requests a literal repetition which the adult finds often difficult to achieve. Primitive rites, primitive music show us that monotony may lead to ecstasy and trance; monotonous movements are used to soothe the child and soothing—though related to the trance—is certainly very different from the tense displeasure of later boredom. It appears likely that the nervousness, the increasing anger, the boredom we feel as adults when confronted with monotony draw their strength partly from our desire to *avoid* emotions similar to those we experienced as children with regard to monotony, because we are no longer allowed to enjoy these infantile reactions. Still, one reaction to monotony in which we have not changed since early childhood is that we fall asleep. When we are working at a machine or trying to understand a lecture, etc., going to sleep would be in strong contrast to what is expected of us, it would be a denial of reality. It is thus a secondary reaction when we become nervous or angry about monotonous noises. We are not nervous or angry about the noise itself, but we are nervous lest the monotony may evoke the old desire to go to sleep; or angry that the environment makes it harder for us to repress our urge to answer the monotony by falling asleep. Here seems to lie one link between boredom and fatigue. The two have up till now always been linked on account of the increased mental stress due to forced attention.

VIII.—BLASÉ STATE.

Linked with boredom is the blasé state. May I here quote from Stendhal's *Scarlet and Black*? The Russian Prince Korasoff advises Julien how to impress a very virtuous and reserved lady; he says: "A melancholy air can never be the right thing; what you want is a bored air. If you are melancholy, it must be because you want something, there is something in which you have not succeeded. It is showing your inferiority. If you are bored, on the other hand, it is the person who has tried in vain to please you who is inferior. Realise, my dear fellow, what a grave mistake you are making." I think that it would be justifiable to replace a 'bored air' by 'blasé' in this case. The attitude itself shows clearly—in a more emphatic way than ordinary boredom—that the individual is—or pretends to be—unimpressed by what others offer him. It is a continual refusal which acts as a defence against stimulation. Remarks like the famous 'We are not amused' belong to this category. If anything should break through the strong barrier of detachment, it might play havoc with the rigid character of the individual. The overstrong insistence on dignity shows similar features.

IX.—THE EFFECTS OF THE BORED INDIVIDUAL ON OTHERS.

Something else comes out very well in the quotation from Stendhal: the way others feel about our being bored. In this respect boredom acts as a request and demand on others, as a constant proof of the other's shortcomings in satisfying the bored individual's wishes. It needs a strong personality, a strong conviction of the value of one's own words—or an entire disregard for the reactions of others—to continue with one's talk in the face of a bored person and one needs still stronger qualities of this kind to consider the bored person inferior for not taking an intelligent interest in the subject in question. Usually the speaker has guilty feelings on account of selfishness for talking about things which interest only himself but not the listener. This reaction may be coupled with a feeling of helplessness for being unable to secure a sympathetic hearing in the bored individual. On the other hand, it is just this type of people with no feeling for the reactions of others who are able to bore others actively to extinction. In his little book of essays, *Two or Three Graces*, Huxley⁸ differentiates between the active and the passive bore. The first crams the listener with knowledge which he does not want to have, while the second just

wants to be at your side for always and always and always without wanting to talk or being able to listen intelligently. Both types have one thing in common: it is agony for them to be alone. The one constantly needs a receptacle in order to prove his value to himself and the other needs a surround for the same reason. The important point is that neither the boring nor the bored can stand being alone.

It seems that to be boring is already an attempt to cope with one's own passive boredom. The mechanism is the same which has been observed and described of children's ways of dealing with difficult situations; the child acts out in his play what he has passively experienced. This change from passive to active is specially clearly expressed in English: He is bored; he is boring. French and German language possess this differentiation as well, but use it with a slightly different meaning. General usage takes the reflexive verb: *Ich langweile mich*; *je m'ennuie*—I bore myself instead of I am bored.

X.—LONGING AND INERTIA.

Other states of mind which have features in common with boredom are the states of longing and inertia. Boredom nearly combines both. Longing contains more sadness than boredom does, and there is usually some knowledge of the aim. This sadness is comprised in the meaning of the French word *ennui* as defined, e.g., by Littré.⁸ He says: "Ennui means all types of sufferings of the soul, including those caused by the death of a person we love, or their absence, by the loss of hope, by any misfortune whatever."

In contrast to boredom longing is directed towards an external aim. One longs for a person, a place, some object, while in boredom one longs, so to speak, to be given an external aim. Longing appertains to object relations, while boredom tries to establish pseudo-object relations in order to get help in the combat against more fundamental wishes.

In inertia the emphasis is on the inhibition of action. Less restlessness is felt as the wish for action is more strongly repressed than in boredom. The inability to do anything is keenly experienced. But for this very reason the impulse aim may be better defined, as there is less danger that the individual will act according to his impulses. Inertia may therefore allow more day-dreaming, i.e., action in phantasy.*

XI.—BOREDOM AS A DEFENCE AGAINST OUTSIDE STIMULATION.

Another form of boredom is directed against stimulation from outside agencies. This feeling of boredom is experienced by many when they hear about continuous disastrous events. With such subjects people refuse to take interest for fear of being emotionally touched and forced by their conscience to act according to some uncomfortable conviction and ideal. Another reason may be that we fear that we might be unable to understand and master the subject and refuse for this reason. This type of boredom is very difficult to differentiate from ordinary boredom. While the one is fear of doing wrong, the other is fear of having to do the right thing. One is fear of *Id* impulses, the other fear of Super-Ego requests.

XII.—SUMMARY.

Summarising I should say that in boredom we are confronted with the unpleasant task of fighting again—as we have done before unsuccessfully and by means of repression—against our own impulses without help or support from our surroundings. The ambivalent attitude towards the temptation is responsible for our finding it so difficult to take the help when it is offered.

Is there a remedy for this prevailing disease? The organised filling up of free time is not enough. By this method the child—instead of being educated to find outlet for its mischievousness and to sublimate the impulses which are in their original form considered

* A man with paralysed arms may allow himself a strongly aggressive phantasy without feeling anxiety, while a man with sound arms might be afraid to rouse himself through his phantasies to such a pitch as to act according to his day-dreams.

to be detrimental to society—learns only to kill time in accordance with adult suggestions and commands. Instead of ventilating his phantasies and conflicts in his own free play, instead of building up a capacity to bear the strain of manual inactivity, he gets organised into games and recreations which—though they may give his social self quite a lot of pleasure—are essentially unindividual. He remains therefore to a great extent dependent on the outer world to get him interested, occupied and entertained. The possibility of thinking instead of always doing, the ability to follow a trend of thought to the bitter end, or of 'standing and staring' which may lead through wonder to research, investigation and understanding, remain alien to him. Thus we find him or her stranded and bored when left to their own devices, which—if they come out—may appear in explosive forms of undesirable behaviour. Free time is thus for many people a temptation with which they have never learned to deal, a period in which it is harder to fight impulses which are allowed only modified satisfaction. These people have never learnt to know themselves. I am afraid that at this point one might feel that I am encouraging 'morbid introspection.' Nothing of the kind! But the need is for enough insight and courage to understand one's own reactions and to be able to be on good terms not only with the environment but with oneself.

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A LIST OF RESEARCHES IN EDUCATIONAL PSYCHOLOGY AND TEACHING METHOD.

PRESENTED FOR HIGHER DEGREES OF BRITISH UNIVERSITIES FROM 1918
TO THE PRESENT DAY.

Classified according to Dewey's Decimal System by
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Department of Education, University of London King's College,
With a Foreword by F. A. CAVENAGH.

PART I.

FOREWORD.

CONSIDERABLY more educational and psychological research has been done in British universities during the last twenty-five years than is commonly realised. Although some theses have been either published, or summarised in the general and educational journals of the British Psychological Society, many have not. Thus the results of patient, and sometimes distinguished, work are apt to be buried: not only do valuable investigations remain unknown, but, what is even more unfortunate, their findings and recommendations cannot be tested and applied. In addition, a ready means of discovering what subjects have been treated would save those embarking on research, and their advisers, from uncertainty and waste of time.

It is to supply this obvious need that Mrs. A. M. Blackwell has compiled the following list; and, in order that it may be kept up to date, we appeal to Heads of Departments to send us annually the titles of theses successfully presented by research students: a yearly supplement could then be issued.

For easy reference, theses are classified according to the Dewey decimal system; cross-references and details are given, wherever possible, of published theses and the periodicals in which they have appeared. Information as to the conditions under which those housed in university libraries may be consulted is given in Mr. Luxmoore Newcombe's pamphlet, *The Accessibility of British University Thesis Material*.

F. A. CAVENAGH.

NOTE ON THE DEWEY SYSTEM OF CLASSIFICATION.

The classification is that used in most libraries—the Dewey decimal system.

In this system, each of the main heads under which subjects may be classified is given a whole number; e.g., 159 is allotted to Philosophy. Sub-Divisions under these main heads are indicated by the addition of a decimal; thus, Psychology, in the most recent classification, is numbered 159.9. All works dealing with Psychology will bear this number, further sub-divisions being indicated by the addition of figures in further decimal places. Thus, Mental Development and Capacity appears under 159.92, Executive Functions under 159.94. Still further sub-divisions are indicated by the use of further decimal places; e.g., Learning appears under 159.9535. This indicates that it is a sub-division of 159.953—Memory and Learning, which is itself a sub-division of 159.95—Higher Mental Processes, which is a section of 159.9—Psychology.

The omission of a number indicates that there is no thesis which should be thus classified. The number under which works on any subject are classified can be found by reference to Dewey's Decimal System and Relative Index.

Where the thesis or a substantial part of it has been published this is indicated.

I am most grateful for the help and consideration given me by the Professors, Heads of Departments, and Librarians of the Universities in the United Kingdom and Eire. Indeed, without their generous co-operation this list could not have been compiled.

SUMMARY OF SECTIONS.

- 159.92.—*Mental development and capacity—comparative psychology.*
- .93.—*Sense and sense perception. Sensation and perception.*
- .94.—*Executive functions—emotions, feelings, motor functions.*
- .95.—*Higher mental processes—attention—memory, learning, thought, etc.*
- .96.—*Special mental conditions.*
- .97.—*Abnormal psychology—nervous and mental disorders.*
- .98.—*Relation to other subjects—social psychology, etc.*

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(To be continued.)

CURRICULUM AND EXAMINATIONS IN SECONDARY SCHOOLS.

(London: His Majesty's Stationery Office, 1943, pp. 151. 1s. 6d. net.)

THE Report on Curriculum and Examinations in Secondary Schools, already known as the Norwood Report, is in line with the Government White Paper which gives to secondary education the new meaning that it is a stage of education which every child will enter at the age of 11+. Thus Professor Tawney's plea of twenty years ago, "secondary education for all," is now to be realised. The meaning of secondary education is to be widened so as to include three types of school: the secondary grammar, the secondary technical, and the secondary modern, offering three types of curricula which will best serve the needs and capacities of three groups of pupils. These groups are of necessity only approximations to types, for individual variations overflow all arbitrary divisions, and the possibility of a school combining a grammar and a modern school is not excluded.

Admission to each type of school will be largely decided by the pupil's school record, and the first two years will offer a curriculum roughly common to all schools.¹ At the age of thirteen there will be a reconsideration of the type of education most appropriate to the pupil and transference arranged where desirable.

Full-time education will be given to fifteen or sixteen and then part-time education at the age of 18+. The advantages of a period of six months' national service following this age are stressed.

The three types of pupil are described. The first, for whom the grammar school is appropriate, "is interested in learning for its own sake, can grasp an argument or follow a piece of connected reasoning, is interested in causes, cares to know how things came to be as well as how they are, is sensitive to language as expression of thought, to a proof as a precise demonstration, to a series of experiments justifying a principle; is interested in the relatedness of related things, in development, in structure, in a coherent body of knowledge." The second is the pupil "whose abilities lie markedly in the field of applied science and art," and who will find in the secondary technical school his appropriate environment. The third, who "deals more easily with concrete things than with ideas," will go to the secondary modern school. Each type of school "should have such parity as amenities and conditions can bestow," but "parity of esteem," one of the educational catchwords of our time, "can only be won by the school itself." Another over-used phrase, "equality of opportunity," is more carefully rendered by "equivalence of opportunity," for what the new system seeks to give is the opportunity to receive the education for which each pupil is best suited for such a period and to such a point as is fully profitable to him.

The scheme is an attempt to realise the important principle endorsed by the Committee that "belief in the child as the centre of all education gives a perspective and a vision to education," a principle which all educationists will gladly support. The difficulties in its way are social, for it reverses the trend of educational practice which gave a minimum 'elementary' education to the children of the poor and a 'secondary' education to those who had the means to pay higher fees and to keep their children in school for a longer period. That cleavage by wealth is firmly entrenched and will not easily yield to the democratic demand that every child shall receive the education which best suits his capacity and his needs. Its realisation depends upon the success of the new schools in winning the conviction of the parents that they are of comparable status to the older schools, and that conviction will be a slow growth. Upon this depends the success of transference at thirteen, a policy advocated in the Hadow Report in 1926 but frustrated by the obvious lack of parity.

¹ The suggested method of selection of the 11-year-olds for various types of schools is not dealt with in this review, as it is the subject of an article by Professor Burt in this number of the JOURNAL.

The alternative to large-scale transference is the multilateral school, and although the report does not exclude this provision it pays little enough attention to it and does not explain its neglect. Varied experiments would seem to be desirable before we pin our faith to any one pattern.

The report gives only brief accounts of the work of the technical and modern schools, and thus limits the meaning of its own title. The function of the technical school is mainly to train for entry into industry and commerce. The modern school is to provide a general education for the 'majority' of the boys and girls of the country based on the immediate interests and environment of the pupils and using practical and concrete methods. No attempt is made to assess the numbers of pupils likely to fall within each of the three categories; is one justified in reading into the survey a supply of grammar schools not much larger than at present, a considerable expansion of technical schools and a very large preponderance of modern schools? In round numbers is the scheme to be of the order of 15 per cent, 15 per cent and 70 per cent? If so, one would have preferred that the curriculum of the grammar school, which occupies half the space of the report, should have been treated less fully and the space used for a more careful examination of the problems of the other two types.

The present curriculum of the grammar school was evidently assailed by many witnesses, and the advocates of new subjects—the list mentioned is economics, social studies, Colonial history, American history, Russian history, comparative religion, ethics, clear thinking—appeared in force. The Committee showed a cautious conservatism: the curriculum has a traditional value based on long experience and the new claimants can best be met by a reconsideration of content and a change of emphasis in the existing subjects. To the charge that the curriculum is unsuited to many of the pupils the Committee reply that the solution lies in re-directing such pupils to another type of school; the present weakness lies in the fact that the schools have attempted to meet too many diverse needs, have carried too many subjects to the same level, and been driven by examination requirements to stress information, memory and second-hand opinions. One weakness is stressed above all others—the failure to improve the standard of written and spoken English, a verdict which must be accepted by all who know the work done by pupils in the schools of other countries.

The report is more bold in discussing examinations. The school certificate examination was planned as a qualifying test giving entrance to the universities and the professions, but it has become a competitive struggle imposing a tyranny on curricula and methods. Similarly the higher school certificate has become a competitive test which imposes a severe strain on many pupils and narrows too much their interests and activities.

It is recommended, therefore, that the school certificate should become an internal examination in two stages. For seven years it should be under a standing committee of the university examining bodies and on this committee teachers would play a large part. Schools would be encouraged to offer their own syllabuses, and there would be no restrictions on the choice or number of subjects offered. The certificate would be a record of the pupil's achievements. After seven years the Secondary Schools Council would decide whether the time was ripe to make the examination purely internal.

Two comments suggest themselves. An internal examination places upon teachers a responsibility which will not be universally welcomed, and they must be prepared for their task during the transition period which the Committee wisely suggests. The second concerns the part to be played by the Board's inspectors. They are to serve as 'assessors' on the Standing Committee for the award of the school certificate, and are thus to become both inspectors and examiners.

The report makes a serious error in its reference to the history of inspectors. It contrasts the present relationships between inspectors and teachers with the unhappy relationships of a former day: "At their beginning in the nineteenth century inspectors were inquisitors; they assessed payment by results, their visits were feared by teachers and by taught." But at their beginning inspectors were *not* inquisitors, and Kay-Shuttleworth, who first appointed them, was careful to prevent them from assessing,

criticising, or condemning, the teachers. They were to be friends and guides of the teachers, carrying ideas and stimulus from school to school. That relationship ceased when inspectors also became examiners and the two functions were combined; it was then that their visits were feared by teachers and by taught. If, when the examination becomes internal, the inspectors are to assume any powers of examination, it may be that the teachers will exchange one master for another. An internal examination is based on trust; if that trust is limited and suspiciously scrutinised it will bring back the old evil of distrust.

The higher school certificate examination is to remain the concern of the University Boards but is also to be modified. To make a convenient period for national service it is to be based on a five-term course terminating in March, and is to become a qualifying examination for universities and the professions. The choice of subjects would be more free and the content of the curriculum reduced.

In addition there is the difficult problem of university entrant scholarships which it is recommended should remain within the regulations of the universities. Two suggestions are made: the Oxford and Cambridge scholarship examinations should be held simultaneously in December, so as to diminish the evil of continued search by the unsuccessful, and the award of a university scholarship ought to constitute a claim on public funds for emoluments necessary to secure the full advantage of a university course.

In March would come the examinations for local authority and State scholarships, conducted by the University Examining Boards by means of scholarship papers. The procedure is to be modified. The examining bodies will send to the local authority two lists, one denoting candidates of exceptional merit, and a second candidates of good attainment. The authority would set up a Board charged with the duty of interviewing the candidates concerned and collecting evidence from their school record. In this review some candidates might be transferred from the second to the first list. The revised list would then be forwarded to the Board of Education, who would make the awards and bear the whole cost. There would be no limits to the number of awards except the supply of sufficiently qualified candidates. In addition the local authority would be empowered to make additional awards to candidates of promise in ways not normally tested by university bodies, and the State would bear half the cost of these awards.

The purpose of this procedure is to remove the financial inequalities between different areas and yet preserve local interests. The key to its success lies in the competency of the Board set up for the purpose of reviewing the examination results and giving weight to other qualities. It is suggested by the procedure of Oxford and Cambridge, where the interview and any signs of promise are as important as, sometimes more important than, performance. The attempt to assess the qualities we vaguely describe as leadership is important but difficult, and is abandoned entirely by many awarding bodies. The result has been unfortunate; students of good but not exceptional intellectual ability, in their anxiety to win an award, have been tempted to limit all their efforts to examination requirements, for the pursuit of wider interests and activities has seemed to threaten their plan. They become good examinees but in many cases their zest and forcefulness of character has been overshadowed by the one thing necessary. The qualities they ought to possess as future leaders are suppressed; the qualities which would make their university life more fruitful have been lost. The method put forward in the report promises a better way.

The longest part of the report—Part III—is devoted to the curriculum, and the first chapter reviews some general problems. Thirteen chapters that follow are devoted to the separate subjects of the curriculum. This is surprising in view of the dictum in the first chapter: "We deplore the exaggerated importance which has been given to subjects as such," and of the strong plea for the return of the form master, who is declared to be essential in lower and middle forms and desirable in upper forms. This is in line with the whole standpoint of the report that the curriculum must do justice to the needs of the pupil, whereas specialist teaching begets vested interests and the rigid separation of subjects. It is, perhaps, unfortunate, therefore, that the specialist teacher may see only that part

of the report which refers to his specialism, and miss the penetrating criticism that is directed in part to him.

In general, the report is marked by a lofty idealism, a cautious conservatism, and a balanced outlook. It puts first and foremost the varying needs and capacity of the child. It seeks to redress many of the faults that are now present, to reduce the examination evil, to curb the specialist, to nurture individual gifts, and to diminish the financial limitations that create such large inequalities among our gifted children. It is condemned in some quarters for being too timid, in others for being over-bold. Its critics complain that their particular demand is not satisfied. The report will survive these attacks, and its balanced wisdom will stand the test of time more successfully than the partisan's exaggeration of particular faults.

It is, however, both too long and too short : too long in its repetitions and its elaborate explanations and leisurely expositions, too short in its treatment of the technical and modern schools, which are shown to be included in secondary school provision and then put on one side. In the expansion of secondary education that is imminent, which will raise the population of our secondary schools from half a million to two millions, and later perhaps to two and a half millions, it is the technical and modern schools that will need most guidance and undertake the most difficult task. The grammar school has a tradition and a reputation that will serve it for the time being ; the new schools have a tradition to create and a reputation to earn. Their function and purpose need careful enunciation and their curriculum much thought. To say this is to praise the Norwood Committee for what they have done and to urge that they or somebody else should accomplish what still remains to do.

FRANK SMITH.

SUMMARIES OF RESEARCHES REPORTED IN DEGREE THESES.¹

The Correspondence between the Internal and the External Criterion in Item Selection.

By CHRISTINA A. SMITH.

A Thesis submitted in 1943 in part fulfilment of the requirements for the Degree of Bachelor of Education, University of Edinburgh.

Item selection for testing purposes has as its basis some pre-determined criterion of item values, a particular criterion being adopted in test construction because it is regarded as the best measure of the worth of individual items. The practical function of the criterion is ultimately the prediction of the success or failure of an item in fulfilling the purpose of the test.

The criteria applied in the techniques of item selection and analysis are generally of two kinds: internal and external criteria. Total scores obtained by the children tested provide what may be termed an 'internal criterion,' while results obtained on a standardised test, for example, or estimates of ability, submitted by teachers or other competent judges, provide an 'external criterion.'

The present investigation has as its aim a comparison between the effects of applying in turn these two types of item criteria—internal and external—to the same test material. The comparison has been based upon two entirely independent sets of data. In one case the data were supplied by the results (in a group intelligence test) of a random sample of 399 of the eleven-year-old age group in an English county, and in the other the results (in a group picture test of intelligence) of a random sample of 100 of the seven-year-old age group in a Scottish town. These results, in conjunction with estimates of intelligence, given by the teachers of the children concerned, were utilised in the evaluation of the items of the tests by the external criterion. A new evaluation of items was made by the internal method, with the rank order given by total scores as criterion. On each occasion the statistical method was fundamentally the same, the items being analysed by the technique of comparison of 'upper—lower groups.'

The correlations between 'internal' and 'external' item values were found to be high for both tests—·876 for the ordinary group test and ·856 for the picture test.

From the items of the group test selections of the most discriminating items by each of the criteria were made. In selecting the ten best items by each criterion in turn it was found that six of the total number of items were among the ten best items by both criteria. Among the twenty best 'internal' and 'external' items, fourteen of the items were common to both selections, while among the two selections of the fifty best items thirty-eight were common.

Scores obtained by the children in the ten best internally selected items of the picture test were calculated and similarly scores on the ten best externally selected items. Inter-correlations between internal and external criteria and 'internal' and 'external' tests consisting of selected items were calculated. The inter-correlations are given below.

- | | |
|---|--------|
| (1) Correlation between internal criterion and internal test | = ·880 |
| (2) Correlation between external criterion and external test | = ·697 |
| (3) Correlation between internal criterion and external test | = ·838 |
| (4) Correlation between external criterion and internal test | = ·638 |
| (5) Correlation between internal criterion and external criterion | = ·856 |
| (6) Correlation between internal test and external test | = ·920 |

Statistical evidence appears, therefore, to indicate close correspondence between the internal criterion and the external criterion. For the item values by both methods of evaluation have a high correlation, and there is considerable agreement between the criteria in independent selections of the most discriminating items. It seems, then, that the internal criterion and the external criterion yield similar results both in item analysis and in item selection.

¹ These Outlines must be submitted through the Head of the Department in which the research was carried out.

Items of the Binet Test as a Prediction of Reading Ability.

By MARGARET E. H. HINMAN.

A Thesis submitted in 1943 in part fulfilment of the requirements for the Degree of Bachelor of Education, University of Edinburgh.

In this study an attempt has been made to discover whether certain items of the Binet Test (Terman and Merrill 1938 Revision, Form L), while being used in the ordinary way for measuring intelligence, might also be used to predict the reading ability of a child entering the primary school. For this purpose, items of the Binet test were examined and success or failure in these was measured against success or failure in two reading tests.

The subjects used in the experiment were fifty-five children, all of whom had just been enrolled in school and had just reached school age.

In September, 1942, the children were tested with the Terman and Merrill Revision of the Binet Test Form L, before they had any knowledge of reading. After the testing, class instruction in reading was given as usual. In February, 1943, the children were tested with the Vernon oral reading test, and also with a picture test of reading ability, constructed by Miss V. M. McLaren, of Glasgow.

The following correlations between tests were found:

Binet Intelligence Test and Vernon Reading Test .....	.527
Binet Intelligence Test and McLaren Test .....	.565
McLaren Test and Vernon Test .....	.642

Item correlations were calculated by means of the tetrachoric method, between each item of the Binet test, as against each reading test in turn. The seven items which correlated most highly in both tests were found to be as follows:

<i>Year Group.</i>	<i>Item.</i>	<i>Vernon.</i>	<i>McLaren.</i>
IV	Forms .....	.75	.75
IV 6	Commissions .....	.74	.74
V	Definitions .....	.70	.70
V	Counting .....	.70	.70
VI	Vocabulary .....	.70	.79
VI	Mutilated Pictures .....	.69	.79
VI	Numbers .....	.89	.79

The children who passed in both reading tests were found to have an average mental age of six years.

The conclusions drawn from this investigation are as follows, but owing to the smallness of the group, further investigation would be necessary before these could be stated with complete assurance:

- (1) Certain items of the Binet Intelligence Test do appear as though they might be used to predict the reading ability of a child entering school.
- (2) In order to pass in the Vernon Reading Test and the McLaren Picture Test of reading ability a mental age of six years proved necessary.
- (3) From conclusion (2), by delaying reading instruction for those children with a mental age of less than six years upon entering school, the number of failures in the two reading tests might have been decreased.

BOOK REVIEWS.

The Rorschach Technique: By B. KLOPFER and D. M. KELLEY. (World Book Company and Harrap and Co., Ltd., pp. x+436. 15s.)

The Clinical Application of the Rorschach Test: By R. BOCHNER and F. HALPERN. (Grune and Stratton, New York, pp. x+216.)

Continental and American psychologists in the last twenty years have widely used the Rorschach test as an instrument to investigate the psychoses, in vocational, delinquency, child and neurotic studies and more recently as a group technique. In England, Kerr has used it in studies of twins and of London school children; and Vernon in investigations with university students. Beyond the reports of these two investigators there are few references to English work with the test reported in the journals; and many English psychologists regard it rather as an esoteric cult than a practicable approach to personality diagnosis.

The books at present under review, which contain the first full discussions of the method and summaries of research in book form, should do much to modify this view and lead to an urgently needed standardisation on English groups, by age and occupation, and statistical validation in fields other than the abnormal. At present, as the authors admit, the method is primarily clinical and individual; but it permits of wide group application in the study of normal and neurotic personalities and is superior to most in treating personality as a *gestalt*.

Ink blot tests have been well known since Binet and Henri in 1895 suggested their use in the study of imagery types. Whipple, Dearborn, Kirkpatrick, Sharp and Pile have standardised series of blots within narrow limits for the same purpose. Rorschach, putting the method to the service of psychiatry, made large and on the whole well substantiated claims for it in the diagnosis of schizophrenia and organic brain disease; but his *Psychodiagnostik*, first published in 1921, only last year appeared in an authorised American translation. His original scheme of scoring and his interpretations have received further refinement in America, notably by Klopfer himself. There remains some disagreement over symbolism and a tendency to regard the analytic scoring as conferring on the test a strictly quantitative objectivity.

The scoring doubtless will be further simplified and standardised, and the diagnostic criteria more thoroughly validated and made wider in scope: but the basis of the test appears to be sound. Each response, which is regarded as a projection of the personality on to essentially meaningless material, is assessed under (i) *location* of the stimulus; (ii) *determinant* of the response (perception of movement, form, shading or colour); (iii) the *content* and quality of the response. Each category is scored separately and the results tabulated at length on a record blank such as that in the appendix to Klopfer and Kelley's book. From this analysis in roughly quantitative terms a psychogram is constructed to form the basis of diagnosis.

Unfortunately, although each book is provided with extensive references to the literature, neither cites precise figures of either the reliability or the validity of the method. The latter seems likely to be higher in skilful hands than that of personality inventories or even of experimental situations like those of May and Hartshorne. The material of the test is so apparently innocuous that it is unlikely to arouse suspicion and thus has the advantages of dream analysis without the interference of censoring and the distortions of recall. Similarly, although nearly related to word association tests, like Jung's, its pictorial form leaves it free of the interference of mechanical habit and the inhibitions which words often arouse. How far poor visualisers are handicapped, the determination of what constitutes a popular response, what allowances must be made for intelligence level, and whether the artificiality of the situation is not such as to affect the responses of adult neurotics, are problems peculiar to the test which can be settled only by further research with large groups.

Such research is made immeasurably more easy by these two books. The case records cited in Halpern and Bochner are extremely suggestive, particularly for those to whom the test is more than a curiosity. Klopfer and Kelley in their third and fourth parts deal, somewhat cursorily as is inevitable, with the whole field of application of the test. Best of all, both books provide an exhaustively clear account of the procedure and niceties of scoring. Each pair of authors emphasise that while blind interpretations are possible and while the test may be used in isolation, it is desirable to amplify its findings from all available sources; they point out, too, the likely effects of cultural and age differences. At times, however, both sets of authors appear to forget that the test is in the nature of a series of miniature situations and that, without the most stringent statistical validation, rigidly detailed conclusions as to personality structure cannot safely be drawn from reactions to such things as nuances of shading and colour.

A priori considerations should not blind us to the potentialities of the test, even if we regard it at present with caution. Its use as an adjunct and check upon subjective observation is obvious; Dr. Vernon goes so far as to say that he is "unable to call to mind any other test of personality or temperamental traits which will tell me so much about my subjects in so short a time," while Professor Burt has found it successful with neurotics; and its use in differential diagnosis of the organic and non-organic psychoses seems justified. It is to be hoped that these two books, ably written and soundly practical, will lead to an extensive use of and experiment with the test in this country.

W.D.W.

The Structure of Morale: By J. T. MACCURDY, Sc.D., M.D. (Cambridge University Press, pp. vii+224. 8s. 6d.)

Dr. MacCurdy's latest book is no small application of psychology to the affairs of living. His art, smoothly incisive, unjournalistic, and free of misty abstractions, ranges from an analysis of the psychological effects of bombing to national feeling, from the deeper foundations and hidden springs of business life to the smaller crystallisations of sentiment in Baldwin's pipe or Hughes' top hat. Particularly striking is his treatment of variable morale and his neatly vivid analysis of the morale of the combatant nations. Most valuable and challenging is the third part of the book, the discussion of social organisation. His commonsense evaluates the manifestations of human nature in dictatorship and democracy, in careerism, leadership and the problems of liaison, and lays bare the nerves of our public actions with a finely tempered knife. Psychology may be an infant science, but in capable hands its laws interpret, and—a harder task—predict complex events.

Primarily he is talking to an intelligent lay audience and may be excused a few debatable generalisations; yet dangerous arguments from analogy lead him sometimes into positions logically and psychologically indefensible—as when from the postulate "A nation, like a man, has its personality," he proceeds to a point to point correspondence. Elsewhere, too, he seems to accept the hypothesis of a group mind, adroitly side-stepping the more than technical issue. Occasionally some of his arguments are of the after-dinner variety but are just not pointed with that irony which elsewhere illuminates an urbane defence of the ideas and ideals of an older generation.

The book is not merely interpretive. In large things affecting millions—the organisation of a state or any army—and in the individual problem of fighting fitness—the difficult soldier—he has something constructive to say, and something, he it remarked, that only the psychologist can say with authority. With this there is nothing pontifical, much that is disputable, and more that is matter for long and patient thought. W.D.W.

Foundations of Dream Interpretation: By SAMUEL LOWY. (Kegan Paul, Trench, Trubner and Co., pp. 245 and bibliography. 16s. 6d. net.)

Dr. Lowy used to be a specialist in neurological and internal diseases at Bratislava. He has written this book from material gathered for a much larger work, but not at present available. It is a study of dream interpretation carried some degrees further than it has been taken by other researchers. Dr. Stekel, whose pupil Lowy was, admits with pride that the pupil has outstripped his master; and Dr. Strauss claims that a most important contribution has been made to the study of dreams, one of the most important since that of Silberer twenty years or so ago. Dr. Lowy mentions how in writing this book he had at first to overcome a language difficulty; he has, however, succeeded, if anything only too well; he is almost overwhelmingly fluent in English and at times difficult to follow in somewhat involved sentences. But the matter of which he treats, disengaged from digressions, is very valuable, and the work can be recommended for reading by every serious student of psychotherapy.

While granting generous credit to Freud and others, Dr. Lowy in fair criticisms shows how their principles fail to give complete justification for all that lies within and behind the dream. The unconscious is not the receptacle merely of repressions, there are stored therein vague materials for concepts as yet unformed and unrelated to language. From this emerges an attractive theory for forgetfulness of dreams. The irrationality of some dreams is probably to some extent accounted for by the intrusion of sense-impressions on activity already proceeding in the dream-world. And so on. Dr. Lowy deals with much that cannot be discussed in a short review; the section on the biological status of dreaming suggests several lines of thought. One speculation which occurs in reading the short chapter on archaic and juvenile traits and a quotation elsewhere from Sperber, is that *nihil in intellectu quod non prius est in sensu* may be laid open to doubt, for it is indeed strange, if it be true, that without experience of things symbolism can exist as inherited, perhaps as an instinctive propensity, and yet if the reviewer has read aright this claim seems to be made, and Dr. Lowy may have the answer.

The book is intended for the dream-interpreter; readers will learn much from it, more than they will learn from many another book on dream analysis. Yet it must be read critically and cautiously lest when interpreting dreams one sees in them only what one wants to see and oneself gives way to the effects of repressions.

Dr. Stekel hoped the book would score a triumph. It is certainly a book to read and ponder upon, for there is much in it of great value. A.P.B.

Psychological Medicine: By DESMOND CURRAN, M.B., F.R.C.P., D.P.M., and ERIC GUTTMANN, M.D., L.R.C.P. (E. and S. Livingstone, pp. vi+188. 10s. 6d.)

This is one of the most useful introductions to psychiatry that we have come across. It is very clearly written, it does not stress any one psychological theory to an extreme, nor does it attempt to divide neuroses or psychoses into rigid classes, though it gives due place to the special consideration of types.

The introductory chapters deal with the causes of mental disorder, a general discussion of "symptoms," a useful account of "psychiatric case-taking," and general chapters on treatment and constitutional anomalies. Then follow more specialised chapters on organic syndromes, schizophrenia, hysterical reactions, etc.

An appendix of over forty pages gives five further chapters specially devoted to war-time psychiatry. Whilst the book is described as an introduction to psychiatry, it would no doubt be somewhat difficult for a reader who was not generally familiar with the elements of mental disorders and with a good many medical terms. Indeed, for the general student it might be most useful as revision reading after the study of several more specialised books on psychological medicine, or even after the first reading of such a standard text-book as that of Henderson and Gillespie.

Puritan's Progress: By HUGH MATHESON. (Methuen, London; pp. vi+215. 12s. 6d.)

This is a truly remarkable book. It describes what the writer of the Foreword, Mr. L. A. G. Strong, calls 'a spiritual journey,' and it describes it with remarkable candour and insight.

The author was brought up under strict and narrow religious teaching, and though he comes to see the weaknesses of this, his admiration for the characters of his parents and for the genuine elements in much of the religious experience of himself and others remains, in spite of his further 'progress.' It is not too much to say that parts of the book are genuine contributions to the psychology of religious experience. This applies even to the remarkable interim period of the war, though Mr. Matheson does not make quite clear the reasons for the lapse of ideals which he then experienced.

There are some contributions also to the psychology of love and marriage. The author records with frankness the failure of his first engagement, and makes out some case for the value of some 'love play' in adolescence as a safeguard against the illusion that the first intense interest in a member of the opposite sex is genuine love.

His experiences as a school master and with the Christian Scientists also make fascinating reading. The book is written in a delightful style and one is left looking forward greatly to further works from the same pen.

An Introduction to the Study of Map Projection: By JAMES MAINWARING, M.A., D.Litt. (Macmillan and Co., Ltd., pp. viii+113. 5s.)

This is an excellent introduction to the subject of map projection, written specially for pupils taking geography in the higher school certificate examinations and for first year university students.

It is written with admirable clarity and the arrangement shows the master hand of an experienced teacher and one thoroughly familiar with psychological method. Interest is aroused in the nature of the problem to be solved and is maintained by a careful balance between practical and graphic solutions and the mathematical reasoning on which they are based. Equally admirable are the maps and diagrams. These show the same genius (the word is hardly too strong) for clear design and illustration which Dr. Mainwaring has already revealed in his books on *Man and His World*. The publishers have been generous in allowing so many of these diagrams.

Young Citizen: By A. E. MORGAN. (Penguin Books, pp. 126. 9d.)

This Penguin Special is packed full of useful information, vigorous thought, and wise advice on the handling of the young citizen. Dr. Morgan's extensive research work for the King George's Jubilee Trust, already published under the title *The Needs of Youth*, has given him an almost unique qualification for writing a book of this type. It deals with practically every aspect of the difficult problems so prominent at the present time: education, unemployment, delinquency, health and welfare, recreation, boys' and girls' clubs, leadership, conduct and religion. It is no superficial description of the present situation, but delves deep into fundamental psychological points. Everyone interested in the Youth Movement or in adolescent education ought to possess and study the book carefully.

Exercises in Comprehension in English: By W. D. WALL. (University Tutorial Press, pp. iv+76. 1s.)

This is a useful collection of prose extracts from leading writers with questions on each well calculated to stimulate thought, analysis and expression. The method is based on sound psychological ideas and is precisely the kind of book we have long thought needed to make English studies something more than light reading or wearisome attempts to enjoy material beyond the capacity of the pupil. It should provide some beginnings of genuine training in thinking in close association with careful expression.

Art and Craft Education in the City of Birmingham: By HAROLD H. HOLDEN. (City of Birmingham School of Printing, Margaret Street, 1942.)

This handsome volume is primarily intended as a demonstration of the kind of work done in the Birmingham College of Arts and Crafts. It is a delightful production, beautifully printed, and with many delightful full-page illustrations, both of paintings, etchings, printing, silver and pewter work, dress design, etc. It includes a section produced entirely by students in the junior schools of art, and others by students in secondary and elementary schools. The whole is a fine testimony to the high standards of this college of arts and crafts.